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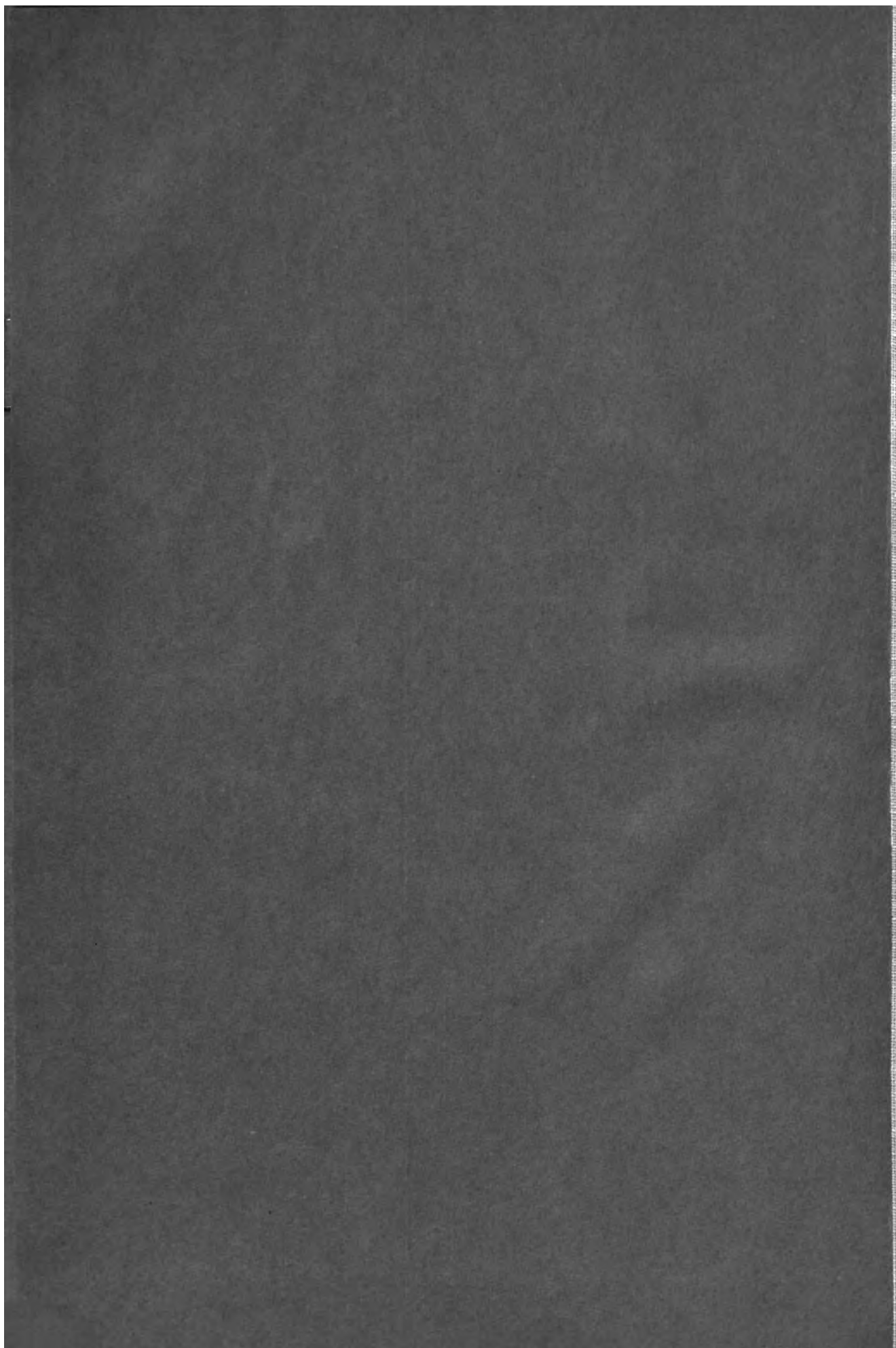
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A Further Investigation

INTO

INFLUENZO-PNEUMOCOCCAL AND INFLUENZO-STREPTOCOCCAL SEPTICÆMIA:

EPIDEMIC INFLUENZAL "PNEUMONIA" OF HIGHLY
FATAL TYPE AND ITS RELATION TO
"PURULENT BRONCHITIS."

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(With Coloured Plates.)

INTRODUCTION.

WHEN we published a paper upon "Purulent Bronchitis, its Influenzal and Pneumococcal Bacteriology," in conjunction with Dr. John Eyre, in THE LANCET of Sept. 8th, 1917, we were particularly desirous of drawing attention to the anomalous character of many of the cases of "pneumonia" that we had encountered in the Aldershot Command during the years 1915, 1916, and 1917, and because we felt that "pneumonia," in the sense of true croupous lobar pneumonia, was a misnomer in connexion with many of them. The "purulent bronchitis" type of certain of these anomalous cases that had up to that time been returned generally as "pneumonia" is now familiar to most Army physicians, but at the time of our own investigations, and those of Hammond, Rolland, and Shore,¹ the bacteriological nature of this severe purulent bronchitis, with its remarkable heliotrope cyanosis, abundant sputum, and high mortality, was not, we think, recognised generally.

Though it was occurring in the form of multiple small epidemics in France and in England, there was then no generalised epidemic to lead to the suspicion that it had an influenzal basis; and it was as the result of extended bacteriological research, *intra vitam* and *post mortem*, and not from the observation of clinical phenomena, that its causation was found to be primarily influenzal, with symbiotic or secondary invasion of the respiratory tract and circulating blood by either pneumococci or streptococci, the virulence of which, it seemed, had been so exalted by the coexistence of influenza bacilli that they caused death in a high percentage of cases by reason of a veritable pneumococcal or streptococcal septicæmia.

The condition, though labelled "purulent bronchitis" on account of the dominating characteristics—viz., the severity of the chest symptoms, and particularly the appearance and quantity of the sputum—seemed to us, even at that time, to be an *influenzo-pneumococcal* or an *influenzo-streptococcal* septicæmia with a prominence of lung symptoms rather than a purely pulmonary disease. The question of the relationship of the streptococcal to the pneumococcal cases is elaborated later in this paper, but it may at once be stated that there is now much evidence in favour of the view that the streptococcal organisms described in certain epidemics may be really pneumococci growing temporarily in streptococcal form.

Since 1916, when the "purulent bronchitis" cases were differentiated more or less clearly from amongst the big group of anomalous "pneumonia" cases, we have had ample opportunities, more especially during the recent epidemics, for broadening and extending our views. We believe now that the "purulent bronchitis" type is merely one of many; that "*influenzo-pneumococcal septicæmia*" is responsible for much, if not all, of the fatal "*influenzal pneumonia*" which

is at the present moment (October, 1918) causing sickness and death, not only amongst troops in camps, but also, and to an almost greater extent, amongst the civil population, affecting Africa, America, and Asia as well as Europe, leaving few towns untouched in any country in which it has obtained a start, and spreading virulently amongst those who are aggregated closely together—for instance, when it breaks out on board ships on the high seas.

It is for others to deal with its epidemiology; we would confine our remarks to the clinical, bacteriological, and post-mortem aspects of the disease as we have seen it amongst troops at Aldershot and elsewhere. But once again, and even at the risk of becoming monotonously insistent, we would emphasise our view that in essentials the *influenzo-pneumococcal* "purulent bronchitis" that we and others described in 1916 and 1917 is fundamentally the same condition as the "*influenzal pneumonia*" of this present pandemic, and that it is only a matter of degree whether there is "purulent bronchitis," "capillary bronchitis," "broncho-pneumonia"—disseminated in some cases, lobar in distribution in others, multiple abscesses in the lungs, or even gangrene of the lungs. Few, if any, of the cases are true lobar pneumonia, and death seems due to an extreme toxæmia or septicæmia rather than to the extent of the lung lesion. In other words, the extent of pulmonary involvement is of comparatively little importance and bears no relation to the virulence of the essential septicæmic conditions.

Statistics: Incidence.—Owing to the extreme pressure of work, the overtaxed state of the medical staff, the variability of nomenclature in official returns, and other similar causes, it has been impossible to keep detailed records of all the cases encountered. In the aggregate we have seen several thousands, of which well over two thousand have been "pneumonic"; and have examined over four hundred autopsies. So variable, however, is the severity of the influenza itself in different units or hospitals at the same time, and so greatly does the mortality vary in troops from different countries that we make no attempt to give statistical details, beyond indicating that our experience is based on thousands of cases and not merely on hundreds.

Pneumonia incidence in the influenza cases.—Of the total number of cases seen in Aldershot and elsewhere during the last few weeks, the majority have been straightforward influenza. Roughly speaking, we may say that out of 1000 cases of "influenza" upwards of 800 have taken an ordinary simple uncomplicated course with fairly speedy recovery and without sequelæ. The remaining 200 have become more or less pulmonary—of these perhaps 80 being of moderate severity, the remaining 120 have been desperately ill; and of this last-named category somewhere between 60 and 80 have died.

These figures do not hold good throughout, for the lung complications and mortality have struck us as being very much higher amongst soldiers who have recently joined up than amongst those of longer service. They have been higher still amongst certain troops from overseas—South Africans, United States troops, and New Zealanders, *par excellence*—than amongst others.

The "pneumonic" cases and the mortality amongst them have also seemed to form a much higher percentage of the total "influenza" cases in a unit in which the epidemic has just started than after the epidemic has prevailed in the unit for a week or two. It is when the epidemic is in its earlier days that it is apt to spread like wild-fire and cause the greatest damage and the highest death-rate; although, so far as a whole Command is concerned, the daily sick and the daily mortality may continue at a high level for a longer time than it does in a single unit owing to the fact that the epidemic, whilst subsiding in one unit, tends to spread and break out in fresh units one after another.

THE SYMPTOMS.

(a) In the Straightforward Influenza Cases.

The symptoms in the straightforward influenza cases are precisely similar to those of ordinary influenza as it occurs in other places and at other times.

The onset has generally been sudden and acute. There have, of course, been many quite mild cases, but again and again a perfectly healthy man may be taken ill in the street or on duty with a sense of general malaise; he feels chilly, suffers from aches in his back, limbs, and head, and rapidly develops such a sense of prostration that wherever he is he has to lie down. He may rally sufficiently to be able to get himself back to his quarters with some difficulty, or he may be so bad that he has to be carried.

He gets to bed and is only too glad to stay there. He is nauseated at the sight of food and "feels rotten." Though drowsy, often he cannot sleep. His temperature is raised, generally as high as 104° F. or more. The pulse is full and firm, its rate is as rule not raised proportionately to his temperature, and his respiration-rate is between 18 and 30. Many cases have red injected palate and anterior fauces and complain of sore throat, but many have no such complaint, and on examination of the chest physical signs are absent. The tongue is almost invariably coated with a thick fur, superficially yellowish-brown at the back and on the dorsum, pale yellowish-white beneath the darker surface, and often with no fur on the margins and tip.

Eptistaxis, sometimes of almost alarming degree, has been an unusually common phenomenon in this epidemic, sometimes at the

¹ THE LANCET, July 14th, 1917, p. 41.

beginning, more often after the patient has already gone to bed, and in quite a number of cases the hearing has become much impaired, a few cases having become temporarily stone deaf. Quinine prophylaxis may be a factor in this, but that there is middle-ear catarrh in at least some of the cases has been shown by subsequent ear discharge, and in one or two cases by considerable bleeding from each ear.

Vomiting has not been usual, but it has occurred often enough to attract attention. *Diarrhoea* to the extent of six or seven loose motions on the first day or two has been rather less uncommon.

Abdominal pain has not been a pronounced feature although occasionally it has existed of sufficiently severe character to lead to a provisional diagnosis of appendicitis, and even to some solicitude as to differentiation from an acute abdominal condition urgently needing operation.

In the earlier part of the recent epidemic *laryngeal symptoms* were not common to the same extent as in a curious outbreak of supposed "Influenza" last year (not the "June, 1918," epidemic), but latterly quite a number of the men have been husky-voiced or even unable to phonate at all. These cases have not necessarily passed on to the "pneumonic" type.

The temperature has remained raised a variable number of days. (See Charts.)

Sometimes it fell suddenly as early as the second day, sometimes ending almost by crisis on the third, fourth, or fifth days, sometimes coming down more gradually to reach normal by lysis between the third and the fourteenth day of the attack. Speaking generally, the duration of the pyrexia has been far longer in the recent pandemic than in the cases encountered in June, and the subsequent prostration appears to be proportionately greater.

As long as the temperature has been up to anything like 101° the patient has continued to feel "rotten." With the fall of temperature rapid improvement sets in; the tongue cleans, the patient feels altogether better, begins to take his food with avidity, and convalesces in the ordinary way. Delayed convalescence has occurred either in those who have deferred taking to bed at the beginning, or, more usually, in those who, for duty's sake, have felt obliged to get up and work again before the acute stage of the disease has fully passed.

(b) Symptoms in the "Pneumonic" Cases.

The "pneumonic" or "bronchitic" complications, so much dreaded just now, come on at no fixed or definite period of the influenza attack.

Frequently there is no distinct influenzal period at all, the case being then very similar to one of ordinary lobar pneumonia in the first day or two. Numbers of such cases have been diagnosed as true lobar pneumonia by those who are unfamiliar with the post-mortem findings, and it is remarkable how difficult it is to persuade those who have not seen such cases before that they are not dealing with ordinary pneumonia.

More often the patient has been ill for a day or two with simple influenza, often apparently not at all severe and indistinguishable from the general run of simple influenza cases, before acute or even fulminating pulmonary complications set in, and they may die so rapidly and with so little actual consolidation that it is clearly not the "pneumonia" but something more generalised, a veritable septicæmia, which kills them.

In a third type of case the "influenza" has nearly run its course, and the temperature may have returned to normal or nearly so for a day, or even several days, before it rises again with the onset of "pneumonic" complications.

All three types have been met with in abundance; the commonest is that in which the case has seemed to be one of simple "influenza," for one, two, or three days before it passes on into the much more serious phase of lung and general systemic complication.

There may or may not be a definite rigor; the temperature, already high, may or may not rise further. (See Charts.)

The patient complains in some way of his chest; he coughs with short dry hacking to begin with; the question of his sputum is discussed below. He often complains of pain in one or other side of his chest or in both sides, either in the region of the anterior axillary line about the level of the sixth and seventh ribs, or posteriorly at one or other base, or all over, or down the front of the manubrium sterni "as though he is all raw inside there."

Sometimes the skin is hot, dry, and pungent as in lobar pneumonia, occasionally a scarlatiniform rash of transient duration may be noted, but, on the other hand, it may be covered with profuse clammy sweat, the latter often leading to widespread sweat vesicles (sudamina and miliaria).

The breathing becomes rapid (often 30 per minute or thereabouts, but not seldom 40, 50, or even 60 per minute). The pulse-rate rises, but it is nearly always no faster than corresponds with the pyrexia, and often it is relatively infrequent except at the very end. There is no orthopnea, and although there is rapid breathing there is no dyspnoea.

The facies is at first flushed and red, but in bad cases it speedily becomes less and less of a purely red tint and assumes more and more of a lavender, heliotrope, or violaceous hue mingled in the varying degrees of redness (pallor with heliotrope hue, redness with heliotrope hue, plethora with heliotrope hue, and all intervening degrees), this peculiar colouration being highly reminiscent of that of acutely gassed cases and an evil sign, for few cases recover when once this characteristic hue has become established.

The physical signs in the lungs.—Certain of the main symptoms will be discussed presently, but first we would refer to the physical signs in the lungs. These are extremely variable, and when a large number of cases have been seen one realises that neither the diagnosis nor the prognosis can be gauged by physical examination. Even at the risk of becoming wearisome we wish to emphasise this. A man with only a few rhonchi to be heard in either lung may die as certainly as another who has dullness, bronchial breathing,

bronchophony, pectoriloquy, and crackling râles over the whole of both lower lobes. The extent of consolidation is no measure of the severity of the infection; and a man may die of this disease with practically no lung symptoms during life and no evidence of consolidation post mortem.

In a considerable number of cases the clinical condition may be illustrated by saying that the patient when first seen looks so exactly like an example of lobar pneumonia that when one examines the chest and finds absolutely no abnormal signs at all one is inclined to say, "I am sure he is pneumonia all the same and I expect we shall find the signs of consolidation and probably rusty sputum by to-morrow." One examines the next day, and may again find no abnormal signs, or perhaps only a few scattered rhonchi in front, with subcrepitant râles at the bases behind without dullness or bronchial breathing. One may still expect consolidation signs the next day, and so on; and the case may run its entire course—to recovery after a week, ten days or a fortnight, or to death in one, two, three, four, five, six, seven, or even more days—without any further signs than the rhonchi in front and the non-consolidating râles posteriorly.

On the other hand, the case may start as above, and in a day or two one may find markedly impaired percussion note at one or both bases, with bronchial breathing and sharp crackling râles, bronchophony and pectoriloquy, either of patchy distribution, or frankly all over a whole lower lobe or over a whole lung, or over both lower lobes. In such cases the unwary diagnose croupous lobar pneumonia simply because they are familiar with these signs in lobar pneumonia and forget that they may be also due to any other cause of extensive consolidation, or even to congestion only. In these cases the autopsy findings show this consolidation in the present cases to be due not to croupous pneumonia but to confluent broncho-pneumonia with varying admixtures of hæmorrhage, peribronchial infiltration even to the extent of abscess formation, œdema, turgid congestion, infarction, and pleurisy.

In other cases, again, the physical signs of some kind of consolidation may be pronounced almost from the start; and although these are to be found a hundred times in the lower lobes, especially behind, or in the middle lobe, for once they are found first in the upper lobes in front, there are occasional cases in which the dullness, bronchial breathing, and crepitant râles develop in one or other upper lobes and not in the lower lobes at all.

In another type of case there is no bronchial breathing anywhere, but both lungs—front and back alike—are full of crepitant or subcrepitant râles from apex to base, recalling the signs met with in some cases of generalised pulmonary tuberculosis.

In yet another type, whatever signs there may be elsewhere in the chest, one base becomes completely dull with silence as to breath and voice sounds; the dullness being of variable extent but generally extending a hand's breadth or more upwards from the base. Needling generally discovers turbid fluid in the chest in such cases, and small amounts of pleuritic effusion are common if the patient does not succumb too soon, although large pleural effusions are relatively rare.

Another phenomenon adds complexity to the picture.

This is the disappearance of bronchial breathing, which may have been pronounced and unmistakable a few hours previously, ordinary vesicular murmur now being heard instead. The bronchial breathing may re-develop perhaps a few hours later, or next day, either where it had been heard before, or in another lobe, and again it may disappear and be replaced by harsh vesicular murmur. The explanation of this seems to be the varying degrees of collapse that result from accumulation of thick mucus in the tubes. When a fair area of lung tissue becomes temporarily airless from this cause, bronchial breathing may be heard over it; within an hour the mucus in the tube coming to this part may have been displaced, and the alveoli have re-expanded with air, so that vesicular murmur is heard where a short time previously bronchial breathing was marked.

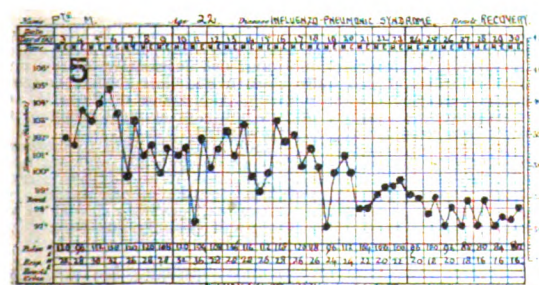
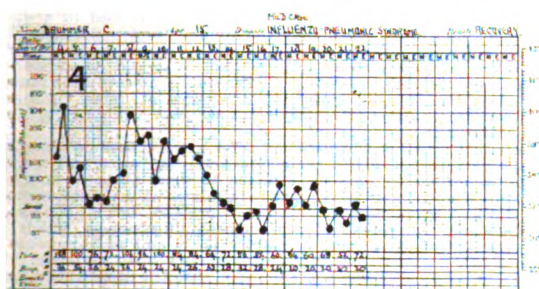
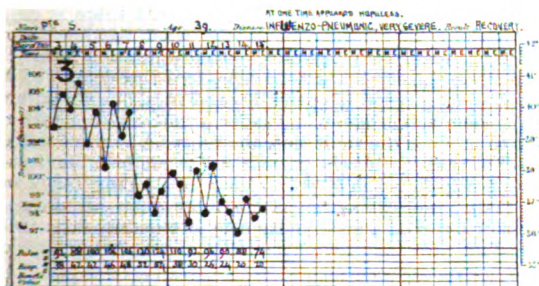
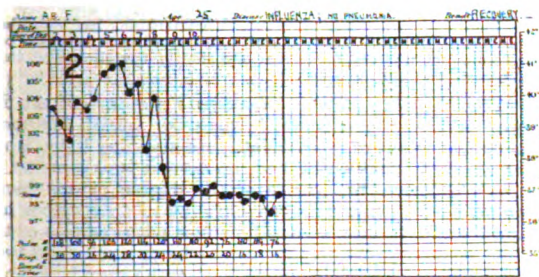
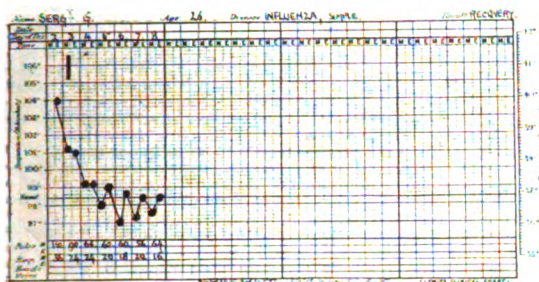
Apart from consolidation, the formation of fluid in the chest has been infrequent, remarkably so for cases in this Command, in which empyema is so common as to be almost the rule in all pneumococcal and streptococcal infections of the lungs. The coexistence of pleural effusions will be dealt with in the consideration of prognosis, suffice it to say here that its relative infrequency seems to indicate a high degree of virulence of the infecting organism and the incapacity of the tissues to react thereto. Towards the termination of the epidemic effusions became far more frequent in the pneumonic type of case with a high percentage of recoveries.

The sputum.—The cases of fatal "purulent bronchitis" of former years were characterised by the expectoration of immense amounts of sputum—often from 10 to 15 ounces in the 24 hours, this sputum being in the main pure pus, with little froth, with some blood, bright red in some cases, rusty in others, in a minority of the patients. Precisely similar sputum, necessitating the emptying of full sputum pots twice or more in the 24 hours has occurred in one group of cases we have seen in the present epidemic—the earlier and very fatal cases amongst United States troops; but in every other group we have been much struck by the relative paucity and even the entire absence of sputum.

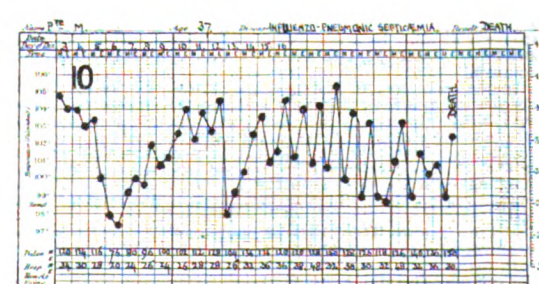
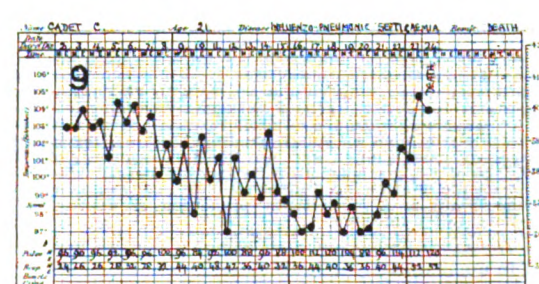
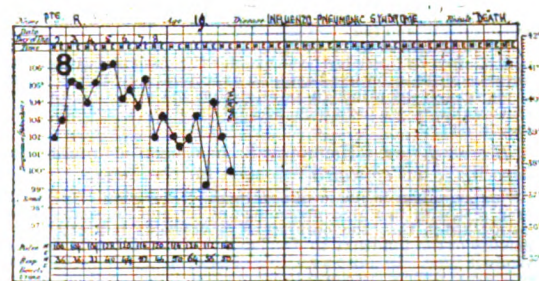
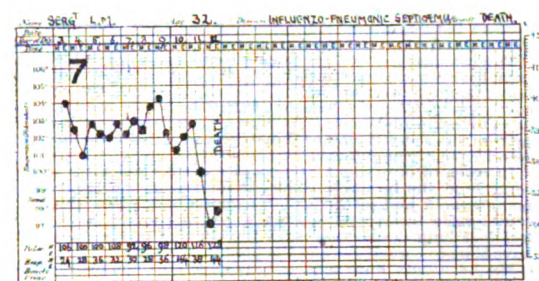
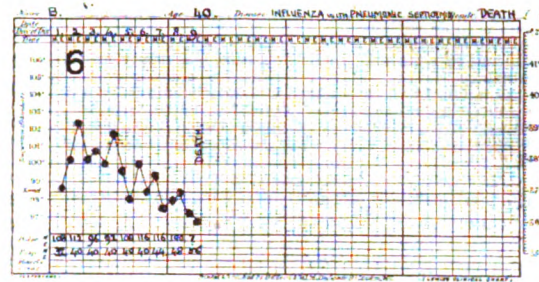
This paucity has not been confined to cases with any particular variety of predominant physical signs. Cases have been encountered with signs mainly of bronchitis with only a little frothy sputum; other cases with only bronchitic signs, and yet an expectoration of 15 ounces of pus a day; other cases in which the signs were those of extensive or confluent broncho-pneumonia with hardly any sputum; others, again, with physical signs of broncho-pneumonia of confluent type and lobar distribution with copious purulent expectoration equal to that which is familiar in "purulent bronchitis" cases.

There is no rule as to the amount of sputum, and those cases that have little sputum are, in other respects, especially as regards prognosis, very similar to those that produce half a pint in 24 hours. What has struck us a good deal in this connexion is that the cases that occur in any particular district tend to conform to one type in regard to the amount

Charts of 5 Cases of Recovery.



Charts of 5 Fatal Cases.



The temperature charts in the cases of influenza and influenza "pneumonia" have been so extremely variable in type that a hundred or more would have to be reproduced if every species were to be depicted. The above serve to represent certain of the commoner types, however. The five on the left-hand side are from cases that recovered; the five on the right-hand side from cases that died. The authors think that the charts and their variability speak for themselves, so they have not commented on them in detail.

of sputum. Probably this is not a universal rule, but it has been a striking phenomenon in the present epidemic in which we have seen large collections of cases in widely-separated districts.

The sputum, when it is abundant, has generally consisted mainly of pus with or without blood; it is then not strikingly frothy. When it is not abundant it still contains pus, but it is often frothy and mucoid in addition. In neither case has it any strikingly offensive smell.

It is often free from blood, but occasionally it has a definitely rusty colour, simulating that of croupous pneumonia to some extent; though even when it is definitely rusty it is seldom of the glairy tenacious consistence that is so characteristic of true pneumonic sputum.

Hæmoptysis.—Apart from more or less altered blood in the sputum itself, actual hæmoptysis has been a very common phenomenon.

In the slighter cases with this condition the sputum pot exhibits frothy mucopurulent material in which occur streaks and splashes of bright red blood in varying quantity. This blood is spat up as a rule independently of the actual sputum, even if synchronously with it. In quite a considerable number of cases this hæmoptysis has attained a degree comparable to that of phthisis. The bed-clothes, wall, and floor have become blood-spattered during a coughing paroxysm, and as much as 10 ounces of bright red blood may be coughed up in a few minutes.

The conclusion has sometimes arisen that an old phthisical cavity must have become lit into activity by the new acute pulmonary infection, but post-mortem examination in such cases has not confirmed this suspicion, and there is little doubt that the hæmoptysis is due in many cases to the opening of small pulmonary arterioles by the acute infective process, in others it may be due to the infarcts in the lungs which are seen frequently at autopsy.

In cases of only slight hæmoptysis streaks and wisps of blood may come from the intensely engorged mucosa of the lower trachea and main bronchi, and in these the prognosis is not absolutely bad; when considerable hæmoptysis occurs it seems probable that it is due to localised lung destruction, with the opening of arterioles before they have time to thrombose, and the prognosis is grave.

We have only once seen a hæmoptysis so abundant immediately before death that the hæmorrhage itself could be regarded as actually the cause of death. On the other hand, we have seen cases with acute and considerable hæmoptysis recover, so that though a very grave sign it is not a hopeless one; when the hæmoptysis has been only in the form of wisps and streaks we do not think the prognosis any worse than it is in the cases generally.

A final reference as to hæmoptysis must be made to a few cases in which, after recovery has occurred and the patient has been apyrexial for several days, he has begun to expectorate quantities of comparatively fresh blood although no alteration in the symptoms occurs. In all these cases—we have seen perhaps eight in all—nothing untoward has developed.

Hæmorrhages.—Hæmoptysis has been common, as just described, but *epistaxis* has been far commoner.

This symptom is not confined to the "pneumonic" cases, but has been met with in a high percentage of the uncomplicated cases. We do not think that the occurrence of epistaxis indicates any special liability of the influenza to develop into the dreaded "pneumonic" or virulent type. In quite a number of cases the epistaxis has been really severe and difficult to control; more often, however, it has been merely a temporary nuisance liable to recur several times but invariably ceasing without treatment.

The blood from the nose has generally been bright red, such as would come from a small arteriole if it were ulcerated; and the prevalence of this epistaxis acquires additional significance when one realises how often the sphenoidal and ethmoidal sinuses contain pus at autopsy (see *Morbid Anatomy*, below), this pus being found to be teeming with pneumococci, sometimes associated with Pfeiffer's bacillus. The epistaxis occurs early; its character suggests erosion by an inflammatory process and encourages the suspicion that the pneumococci gain access not primarily from the lungs, but from the nose, naso-pharynx, and accessory nasal sinuses, and we would consequently advocate the wisdom of using simple antiseptic gargling and nasal douching as a therapeutic measure in all influenza cases in the first stages, and also emphatically as a prophylactic precaution in healthy individuals exposed to the infection.

Hæmatemesis has not been common, but we have met with it in approximately a dozen cases.

In some of these there has been the possibility of epistaxis occurring during sleep, the blood from the nose having passed down into the stomach until enough has accumulated there to make the patient vomit and bring up an alarming amount of blood not really derived from the stomach at all. In a few cases, on the other hand, the vomiting of swallowed blood could be excluded, and true hæmatemesis must have occurred.

In one such case, for instance, the patient was awake all the time; he vomited at 2 P.M., bringing up only mucus and partly digested milk; at 4 P.M., without any nose bleed or hæmoptysis in the interval or afterwards, he vomited again and brought up over a pint of pure blood, darker than fresh arterial. He had no particular abdominal pain, but in this case, and in several others, we felt sure that there was some bleeding breach of surface in the gastric mucosa, possibly of hæmorrhagic erosion type. Such hæmatemesis is not confined to the fatal cases.

Melæna has also been observed: but whether this has resulted from swallowed blood in every case we cannot say. We have, however, met with many cases in which a quantity of bright blood has been passed per rectum; this has particularly occurred shortly before death.

Hæmaturia has attracted notice very seldom. In a small number of cases the urine has been blood tinged or even red or blackish; but in all of these that we have seen the hæmaturia has been part of a definite acute nephritis; the latter has been very common, and blood cells may be found in the urine microscopically in a high percentage of the "pneumonic" cases. Hæmaturia apart from nephritis we have not met with.

Purpura or other form of hæmorrhage into the skin has been very uncommon indeed. In a malady associated with such severe toxæmia

we should have expected purpura to be common. We have met with no case of generalised purpura. One case had extensive purpura of the extremities; another exhibited severe purpura of the legs between knee and ankle, associated with a hæmorrhagic bullous eruption of the same parts. Both recovered.

Several cases have occurred of acute sudden painful oedema of one or both feet associated with diffuse dull red deep seated purpuric tender spots beneath the skin of the dorsum of the swollen foot, similar to those described by Osler in cases of infective endocarditis; possibly both the swelling, the pain, and the tender purpuric spots on the feet in such patients are the result of local changes in the smaller vessels of the parts—thrombotic or embolic.

Hæmorrhage from the ears has been seen by us in one case only; the blood-staining of the pillow that resulted was extensive, but the total blood lost was not great. It was the result, we think, not of any special hæmorrhagic tendency, but of blood-discharge from very acute bilateral otitis media.

Other forms of hæmorrhage have not attracted notice; we have seen approximately 50 of the "pneumonic" cases in the female sex (mainly in the Nursing Staff), but in none has there been any special tendency to undue uterine bleeding.

A further indication of the hæmorrhagic tendency is afforded by those cases which have developed a pleural effusion. In the majority of these cases the prognosis is relatively good, the fluid has been sterile and the preponderating cell has been the lymphocyte. In a few cases the fluid, which has still been markedly hæmorrhagic, has contained pneumococci. In three cases a sterile hæmorrhagic fluid in considerable amount was obtained from one side of the chest and thick streptococcal pus from the other.

The colour of the patient: heliotrope cyanosis.—Of all the features of the "pneumonic" cases we would lay most stress on the colour of the patient. He may not have much colour at all, he may be flushed, he may be sunburnt, or he may be plethoric; but whatever the degree of his facial colour we have always been thankful when this colour has remained red. It may be a sallow face with redness of the lips and ears only, or the patient may be of a rubicund type with general redness of his whole face, or he may be flushed with the unnatural redness of fever; but so long as his lip and ear colour, whatever its degree, is red there is ample room for hope of recovery, no matter what the lung signs, the temperature, the pulse rate, or the respiration rate.

When, on the other hand, to reproduce the colour of the patient's facies, especially the lips and ears, one would need to mix some heliotrope, or lavender, or mauve-blue with red paint to produce the right tint, the prospect is grave indeed, even if at the moment the patient seems comfortable, has no signs of consolidation in either lung, is sleeping fairly well and taking nourishment, has no more than an ordinary degree of pyrexia, a good pulse rate, not unduly fast, and a respiration rate that may not strike one as being unusual in the circumstances.

This colour may be confined to the lips and ears, or it may affect the rest of the face as well; in either case it is the surest basis on which to pick out those cases in a ward that are likely to be dead in a day or two from those who, unless they themselves develop the same hue later on, will most probably recover. It is not impossible for a "heliotrope cyanosis" patient to recover, but that he should do so has been the rare exception in this epidemic. The tint is precisely the same as that which struck us so much in the cases of fatal "purulent bronchitis" in 1916 and 1917; and it has been commented on by many other observers.

The actual colour of the patients differ greatly, because some have much, other little, blood in their superficial capillaries, and there is every intermediate degree; but common to them all is the mauve or heliotrope element that would have to be mixed with the red to reproduce the hue in a painting. We do not pretend that all the serious types are like the second of the coloured illustrations which we reproduce, but many of them are exactly like it, and we have taken an unmistakable case to illustrate with emphasis what we mean. We would also lay much stress upon the fact that the dreaded tint generally develops before the patient himself seems otherwise any more ill than those around him who are going to recover. Once the hue is there, however, treatment, as we have elaborated below, seems totally unavailing.

The change of colour may come on in a few hours. In the morning the man may be simply flushed but of good red colour, as in Plate I. By the evening or the next morning, not necessarily feeling much worse in himself and still quite cheerful and clear-headed though ill, he may have developed some degree of the colour of Plate II.; and then it is generally a matter only of hours, or at most a day or two before he becomes of ghastly appearance like Plate III.

At one time we thought the colour might be due to methæmoglobinæmia, but the spectroscopic shows no abnormal pigment in the blood in these cases, nor is there any defect in the oxygen-carrying capacity of the blood (see below); the condition is one apparently of what Professor Haldane terms "anoxæmia," precisely similar to what is seen in gassed cases at the Front and possibly due to analogous causes, to judge from the histological changes seen in the lungs.

The breathing.—One of the most striking features about the breathing in the "pneumonic" cases is the absence of orthopnea even in patients who are breathing very rapidly.

Amongst female cases the desire to be propped up by pillows is not so uncommon, but in regard to men one can go round a hospital and see upwards of 500 cases in all stages of the disease, and it will be exceptional to find even one who is desirous of being so supported. The great majority lie at full length, and although it is probably good

practice to vary the patient's position, so that he is not too long continuously on his back, the patient himself prefers to lie flat.

This absence of orthopnea applies as much to those with confluent consolidation as to those who have signs of bronchitis only. It is not due to the patients being too ill to care, for the mild, the medium, and the severe are alike in this respect. The probable explanation is that the pulse remains good until quite at the very end, and there is little dilatation or failure of the right ventricle. Failure of the right heart is the commonest cause of orthopnea in cases of dyspnea without obstruction to the bigger air-passages, and it is a striking feature of the hearts of these cases at autopsy that its dimensions, right and left sides alike, remain practically normal. In a word, the cyanosis is not cardiac.

The patients breathe with greater rapidity than normally, silently as a rule, except in the terminal phase, and each respiration is short and shallow. When left to themselves the patients may be breathing only 28 or 30 times a minute, but the slightest exertion, such as that entailed by rolling to one side or trying to undo the buttons of the shirt, increases this rapidly to 40, 50, or 60 per minute for the time being, any liability to cyanosis being markedly increased at the same time. There is clearly very little reserve power in the respiratory system, but very few patients complain of difficulty in breathing unless the respiratory movements are interfered with by the pain of acute pleurisy. It is not a *dys-pnea*, but rather a *tachy-pnea* or *poly-pnea*.

Cough is troublesome in some cases, almost absent in others.

It is apt to recur in paroxysms, and these may be very exhausting in the cases in which there is little sputum. When the latter is abundant it comes up fairly easily so long as the patient has a reserve of strength; in bad cases a time comes when the effort of coughing is too much, and the patient, whose lungs are full of what would be better expelled, neither coughs nor expectorates at all.

We have found that a persistent cough is an indication for the examination of the chest (undue examination is, of course, to be deprecated in these "pneumonic" cases) for evidence of fluid.

The pulse.—The heart does not fail as a rule, unless quite as a terminal event.

It is remarkable how often, when the general appearance of a patient shows he has only minutes to live, the pulse may still be quite regular, of good volume, and not much faster, perhaps, than 120 per minute. Earlier, the pulse-rate is generally not faster than corresponds to the degree of pyrexia; and often it is less rapid than the ordinary temperature-pulse ratio would lead one to expect. There are, of course, cases in which irregularity develops, or the pulse races towards the end; but, broadly speaking, the condition of the heart remains satisfactory throughout and the patients do not die from cardiac failure.

It is noteworthy that in no single case did we meet with pericarditis either clinically or post mortem. This, we think, will not prove the case in records from other districts, and we are surprised at not having seen one case.

In one single case typical auricular flutter developed; this appeared to be a direct result of the influenza itself and not of the pneumonic complications, for it was already present when the latter supervened during convalescence from an ordinary influenzal attack. The man made no complaint about his heart though it was beating over 250 times a minute and the pulse waves were too small to feel, and he was doing well until he contracted pneumonic complications a few days after he had seemed to have recovered. He had in fact been apyrexial for two days and had got up in the ward. Digitalis in large doses had an excellent effect upon the pulse rate, which in just 96 hours from the institution of treatment fell to 90 beats to the minute.

Herpes facialis.—Herpes of the lips or chin or *alæ nasi* has occurred in a small number of cases, roughly speaking 5 per cent.

The eruption has seldom been extensive, though sometimes the vesicles themselves and the inflamed area on which they stood have become a hæmorrhagic scab. In one case only has this hæmorrhagic tendency been extreme. In this patient the wide area of the eruption, affecting both nostrils, the upper lip, the lower lip, both cheeks near the mouth-margin, the chin and the neck for some distance below the jaw, with the accompanying hæmorrhage into the area of the eruption, was like that of severe *syprochatois* *ictero-hæmorrhagica*. But it was not followed by a fatal result.

Herpes of the ears.—Sometimes with, but as often without, herpes of the lips and face, herpes of both pinnae has occurred.

The vesicles were generally disseminated over the outer aspects of the pinna either singly or in groups of two or three, and not as coalescing patches. The eruption here was not associated with any other special feature in the cases, but the soreness of the ears was a trouble to the patient.

The eyes and eyelids.—Quite early in the disease the upper eyelid tends to droop, as though the patient were half asleep. This is illustrated typically in Plate I.

In the purely influenzal cases, or in the "pneumonic" cases that are not severely affected, this drooping of the upper eyelids is inconstant, and the patient opens his eyes fully when his interest is aroused; but in the severer cases the droop persists even when the man is spoken to; it is more than a mere state of being "heavy-eyed" then, and it is an unfavourable sign. The eyelids are those of a man who is very toxic or half doped, and at the same time, in bad cases, the conjunctiva is dull and the eye looks dazed. The condition supports the view that the symptoms are due less to the condition of the lungs themselves than to the extremely toxic state of the blood and tissues generally.

Delirium.—Mild degrees of delirium, especially in the early hours of the morning, have occurred even in the purely influenzal cases. In those with "pneumonic" complications there have been remarkable variations in the

degree of delirium presented by patients at different periods of the epidemic and in different areas of the Aldershot Command.

At one time hardly a single "pneumonic" patient out of hundreds presented any delirium at all worth mentioning; then we meet with a series of cases in which delirium lasting day and night, with hallucinations and a tendency to be physically and vocally violent, was pronounced. This delirium seemed unrelated to previous alcoholism, and the cases in which it was most marked were not necessarily fatal. More common than violent delirium with hallucinations was the low muttering type, with the tendency to get shakily out of bed until nurse came and put the patient quietly back again.

Upon the whole, however, delirium of either mild or violent degree was less marked a feature even of the severe and fatal cases than one would have expected. On the contrary, it has been heart-rending to see heliotrope-cyanosed lusty great men breathing 50 to the minute, and obviously bound to die within a brief hour or two, still clear-headed, able to talk connectedly, not complaining and not obviously in physical distress, yet fully conscious of what is about to happen to them by reason of what they know has happened to their fellows from the same regiment a day or two before.

On the other hand, there is a type of termination in which a restless coma precedes death by many hours or even by a day or two. The patient lies low in bed with his head thrown back, moving his limbs or his whole trunk restlessly from time to time, with partly opened mouth, a ghastly yellow pallor of the hollow sunken cheeks, pallid lavender hue of lips and ears, rapid sighing respiration, incontinence of urine and of faeces, a heavy closed-up cellular sort of smell about the bed, but complete oblivion and total absence of any suffering.

Subsultus tendinum.—Apart from delirium, a high percentage of the more serious cases, whether fatal or not, has exhibited the following condition.

This is not so much the "picking at the bedclothes" tendency as marked involuntary jerkings and twitchings, now of one leg, now of the head and neck, now of a wrist or fingers, now of a whole arm, now of one side of the abdomen or of the back—an extreme degree of *subsultus tendinum*. So very twitchy and jerky have some cases been that an overdose of strychnine has been the first suspicion, but the condition has been common without strychnine or any other drug having been used at all. The symptom is further evidence that the patients suffer from generalised toxæmia of severe degree, the badly oxygenated state of the blood being perhaps an added factor in the *subsultus*, the nervous system being starved of oxygen by reason of the anoxæmia.

Otitis media.—Deafness of some degree has been a fairly common symptom, both in the purely influenzal cases and in those with "pneumonic" complications.

Here and there a patient has become stone-deaf for the time being, even when no quinine, aspirin, or salicylate has been administered. It seems likely that the chief factor in the production of this deafness is microbe infection, perhaps pneumococcal, spreading from the nasal mucous membrane to the Eustachian tube. In further confirmation of this view is the fact that, though many of the cases have lost their deafness spontaneously after a few days or a week, some have had severe earache followed by otorrhœa. The radical mastoid operation has been required in two such cases already, and there may be others still to be similarly dealt with. In one case the bilateral ear discharge was so acute that it consisted of almost pure blood. Unfortunately we have not ourselves been able to investigate any such ear case bacteriologically.

Parotitis.—In about a dozen cases—one of the severe "pneumonic" type which ended fatally, the others of simple influenzal type—unilateral or bilateral swelling of the parotid glands has developed when the patient was already in hospital for his influenzal attack.

The chief difficulty in these cases has been to decide whether they were examples of mumps developing during influenza or whether they were infective parotitis other than mumps arising as a complication of influenza, and this difficulty has been increased by the knowledge that an epidemic of mumps has been simultaneously present in the command. Orchitis did not occur, but even if it had done so the further difficulty of possible gonococcal orchitis would have presented itself—such orchitis is met with so often in men who fall ill with something else. None of the parotid glands involved in our cases ended in suppuration. On the whole the swelling, whatever the degree, was relatively painless, and ability to open the mouth fully was comparatively unimpaired.

Jaundice.—Jaundice has been quite uncommon in the cases in the Aldershot Command.

No case has presented more than a slightly icteric tinge of the conjunctiva. Through the courtesy of Captain Means, United States Medical Service, however, we have seen 15 cases of definite jaundice in "pneumonic" influenzal cases in United States troops; the condition of all these men was grave at the time. Full details of these and others will, we hope, be published by the United States authorities.

The smell of the patients.—Just as many typhoid fever patients have a peculiar smell which is difficult to describe, but which is none the less almost characteristic, so do many of the influenza-"pneumonic" cases exhibit a peculiar faint indefinite smell, best noticed, perhaps, when the bedclothes are first turned back for purposes of chest examination.

It is not the sour smell of perspiration, nor is it merely fetor from the coated tongue or theordes that are apt to collect in lips and gums in spite of the most careful nursing. It could not be called pathognomonic, but it has seemed to us worth while to call attention to it. More than once it has been so pronounced that we have asked whether

the patient has had a small dose of paraldehyde or any such drug some time previously; but the smell seems to have no relation to any drug that has been given.

Ⓒ In several cases there has been quite a different smell—a real stench, not of the mouth or of the sputum, nor the result of incontinence, but of the patient's living body generally. It has no particular application to those who have died of the disease, for in no case at autopsy has the body presented any unusual odour, nor do the tissues decompose or become evil-smelling with any undue rapidity, at any rate at the temperature of the month of October.

Nephritis.—A high percentage of the "pneumonia" cases suffer from acute nephritis, but this fact would be missed if reliance were placed upon clinical evidence alone.

There is no œdema of the legs, back, or eyelids. The amount of urine passed daily is not lessened beyond what one would expect from the pyrexia. In a series of cases daily measurements of the urine passed varied between 45 and 70 ounces, with an average of 54 ounces.

It is very exceptional to find enough hæmaturia for it to be recognised by the naked eye. In the course of routine urine examination, however, albuminuria is found in some degree in nearly all the severer cases; and in quite a large number the amount of albumin present is from 1 to 5 parts per 1000. In association with renal epithelial cells, and fragmentary tube casts, generally epithelial and often ill-formed owing to the acuteness of the condition. Red blood corpuscles are seldom seen.

It is most important that absence of all œdema in this type of very acute nephritis should be realised to be the rule and not the exception, and we would urge that the routine examination of urines should be carried out with even greater zeal than usual during an epidemic of this sort lest patients should be discharged as cured when really they are still nephritic. It is from cases such as these that "Rose Bradford kidneys" arise later on—the small, white, granular kidney of "unknown" origin.

Large, red, blood-oozing kidneys of the type seen in acute scarlatinal uræmia have been almost constant at the autopsies of the fatal cases, and the occurrence of this acute nephritis is further evidence of the infecting agent, or at any rate its toxins, being widespread throughout the body, the "pneumonic" part of the disease being but a portion of the whole.

Localised abscesses.—The commonest form of localised abscess in these cases is empyema.

Acute pleurisy is the rule rather than the exception. In many cases this remains dry, but in many others it leads to the exudation of a small amount of fluid, thin but turbid, often blood-stained, not actual pus, though it contains numbers of polymorphonuclear leucocytes and organisms such as pneumococci. In fatal cases death generally occurs before there is time for this to change to true pus, and in cases that recover the fluid most often re-absorbs spontaneously, notwithstanding the presence of micro-organisms and pus cells in it. Here and there, however, we have found cases in which the fluid has gone on accumulating, and far from this proving a bad omen, the majority of such cases have ultimately done well.

We do not think it wise to resort to surgical treatment of the empyema with the same rapidity that one would adopt were the infection in the abdomen. It has seemed to us that when the infection thus shows a strong attempt at localising itself to a definite pus-focus the virulence of the general toxæmia or septicæmia has lessened, as though from the formation of a "fixation-abscess" (*vide infra*). We have come to regard it as a source for congratulation when one of these patients, very gravely ill, develops a definite empyema; our view upon the prognosis improves at once, and we have formed the impression that, unless there are strong individual reasons to the contrary, it is wiser to wait a whole day, or even longer, before resecting a rib.

Another point that has impressed us in this connexion is that simple needling of the chest has been so often followed by improvement in the patient's general condition that we would advocate such needling being done with less hesitation than is generally the case.

Subcutaneous abscesses of pyæmic nature have been seen by us in two cases only.

Although recovery was slow both these cases, very gravely ill for a long time, ultimately recovered. Painful, slightly swollen red areas, generally of small size, developed now in one part, now in another, perhaps a dozen altogether in the course of four or five days. One or two of these broke down into pus, softened, and incision was necessary, the rest resolved by themselves without forming abscesses. Very grave though the outlook had appeared at one time in both these cases, we are inclined to think the subcutaneous formation of abscesses helped these patients to recover in some obscure way. These cases may be analogous to that of the "fixation abscess" produced in the manner described below, and suggest a deflection of the toxins to one focus, converting a septicæmia into a comparatively benign focus of infection.

Hemiplegia.—This occurred in one case only, and it was preceded by auricular flutter for some days. We thought the hemiplegia most likely due to a cerebral embolus from an intra-auricular clot rather than to a cerebral hæmorrhage or to local thrombosis.

Phlebitis of one or other leg, with typical painful swelling of the whole limb, was met with in half a dozen cases.

In one or two the leg condition developed whilst the general disease was at its height; in the others it was a phenomenon of early convalescence. In none of the cases did the vein-clotting lead to any suppurative locally, and the patients recovered gradually without further complications.

Skin rashes.—We have referred above to one case of purpura of the legs associated with hæmorrhagic bullæ between knees and ankles, and to a number of cases exhibiting curious painful purple spots over the dorsum of the foot

accompanied by general œdema of one or both feet. We have also referred to the absence of any generalised purpura in our series of cases, though so many of them were so extremely toxic or septic, and we have discussed herpes of the lips and ears.

Other skin eruptions were infrequent.

In a small number there has been acute inflammatory reddening of the skin around the nose and nostrils, spreading for a variable distance over the face, and presenting the characters of facial erysipelas; these cases did not do badly.

In several there has been a widespread erythema of limbs, trunk, neck and face, resembling the rash of scarlatina at first sight, but exhibiting no characteristic puncta and differing from scarlatina in that neck and face, as well as the trunk and limbs, might be involved by the rash. This erythema could not be attributed to any drug, such as aspirin, belladonna, or salicylate in some of the cases at any rate, and it was not the result of serum injections, though serum rashes did occur in some of the cases treated with antitoxic serum.

In one case there was a generalised morbilliform rash without the coryza or other phenomena of measles.

Meningitis.—Notwithstanding the extreme severity of the general infection and the recovery of pneumococci or streptococci from the blood and viscera post mortem and even during life, meningitis has not been met with as a phenomenon of influenza-pneumonic cases.

Several patients suffering from acute meningitis have been admitted as cases of influenza, but these have all been found to be meningococcal. A certain number of cerebro-spinal fever patients come in all the year round, but the number has, on the whole, been appreciably smaller during this influenza epidemic than it has been in general. It would not be surprising if here and there amongst the thousands an instance of simultaneous influenza and cerebro-spinal fever should occur, and we believe that this has happened, but we do not regard the meningococcal meningitis we have thus seen as essentially related to the influenza. The existence of a widespread epidemic of severe influenza, however, does make the early recognition of cerebro-spinal fever more difficult than ever.

In no case of "pneumonic" influenza seen by us post mortem has there been any obvious meningitis.

Finally, a fairly extensive investigation of severe cases of influenza with special reference to the cerebro-spinal fluid, yielded in all cases an absence of any evidence of increasing intracranial pressure; the fluid was always clear and contained no excess of albumin, very few cells, and was always sterile.

Ruptured rectus abdominis muscles.—In upwards of 20 cases we have seen spontaneous rupture of one or both rectus abdominis muscles, generally in that portion of the muscle which lies below the level of the umbilicus.

The effort of coughing is apparently the immediate cause of this rupture, but the muscle has become diseased before it breaks. Sometimes one finds the rectus extensively affected post mortem without actual rupture having occurred. In most instances, even when there has been no rupture, the affected portion of the muscle presents the same sort of appearance as does the breast of a pheasant when one skins the bird after it has been badly shot at close quarters; the muscle is dark crimson, of bruised appearance, full of diffusely extravasated dark blood, friable, readily torn by the fingers, and it may be squeezed into a pulpy mass without much force.

Why this muscle in particular should be affected in this way we do not know, unless it is the result of vessels in it giving way in consequence of violent coughing efforts. Doubtless the lesion is related to Zenker's degeneration of the muscle such as occurs in other infective maladies, enterica for example; but in ordinary Zenker's degeneration the muscle is pallid and not hæmorrhagic, whereas in the present cases the lesion has gone on to a local hæmorrhagic pulpy state even if the muscle has not been actually ruptured during life. Both rectus abdominis muscles are apt to be affected at the same time in cases in which either is affected at all; that is to say, bilateral rupture has been as common as unilateral.

Subcutaneous emphysema of the chest wall.—In about 15 cases altogether palpation has elicited the striking phenomenon of widespread subcutaneous crackling of the deep tissues of the chest and neck and back, the result of subcutaneous emphysema.

This has always started on one or other side of the thorax itself, generally in front or towards the axilla rather than behind, spreading rapidly over a variable extent of the whole thorax and even to the neck, where it may form a complete collar of crackling swelling. It is an event of very grave import, though one case at least recovered after its development.

It is generally difficult to demonstrate post mortem how the air reaches the subcutaneous tissues. One explanation is to assume its origin from the lung root via the mediastinum; but in some cases at least it results from a small acutely necrotic focus in one lung ulcerating directly through both layers of pleura into the extra-pleural tissues. Minute or small superficial abscesses in the lungs are met with in quite a number of cases; these are surrounded by sticky pleuritic exudate sufficient to prevent the development of pneumothorax when the visceral pleura is ulcerated through at a pin-hole point. The parietal pleura becomes infected by direct extension, and it only needs a pin-hole perforation in it, too, to cause the subcutaneous emphysema of the chest wall which has been so striking in certain cases in this epidemic.

That acute ulcerative or focal necrotic changes in the lung tissue are in this way the cause of the emphysema is further suggested by the way the onset of the subcutaneous crackling has not infrequently been simultaneous with acute hæmoptysis, as though the focal lung necrosis opened up an arteriole at the same time. Nearly all these patients die.

MORBID ANATOMY.

The Lungs.

Although we believe that the infection is widespread and not confined to the lungs, the patients exhibit a preponderance of chest phenomena, so that naturally the lungs attract first attention at autopsy. We would emphasise, however, the bacteriological findings in the heart blood and spleen, and the prevalence of acute nephritis, as indicating that the lung lesions are very far from being the whole basis of the so-called "pneumonic" cases. We think that the fatal disease is an influenza-pneumococcal or influenza-streptococcal septicæmia with more or less marked local lesions in the lungs, but we do not think it is in the main a lung disease any more than we would regard enterica as essentially a bowel malady, notwithstanding the ulcers in the ileum being the chief lesions found post mortem in typhoid fever cases.

In the next place, although the physical signs during life may often be precisely those with which one is familiar in lobar pneumonia, it is absolutely exceptional to find the straightforward typical hepatisation—red or grey—of true croupous pneumonia.

Only in one single case have we found what appeared to be true red hepatisation—and this was in two-thirds of one lobe only, the rest of the lungs presenting broncho-pneumonia, hæmorrhage, and bronchiolitis of the type described below. In one other case a small portion of one lobe looked like grey hepatisation in contrast to the multiple and diverse lesions elsewhere in the same lung.

True lobar pneumonia is not what is found post mortem in the vast majority of the cases. Whole lobes may be consolidated and in an anatomical sense the lesion is "lobar"; but the term "lobar pneumonia" has come by common consent to be a particular and well-defined variety of lobar consolidation, and one does not use the term "lobar pneumonia" of every form of lung consolidation that happens to have a lobar distribution.

In the next place, though some variety or degree of consolidation has been the rule throughout the serious cases in the present epidemic, we would lay much stress upon the fact that here and there an autopsy reveals practically no lung consolidation at all.

The lower lobes may be dark-red, almost black-red, heavy, oedematous, congested, the upper lobes pale and distended; but no part of any lobe actually sinks in water, or, at any rate, only tiny portions, carefully searched for, found with difficulty, and cut out with fine scissors. These cases without consolidation have run almost identically the same clinical course as those with much, and it is one of the striking features of the disease that the extent of the lung consolidation is no measure whatever of the severity of the infection.

This is precisely what struck us when we wrote in 1917 about "purulent bronchitis." Fatal cases of the latter exhibited varying degrees of broncho-pneumonia associated with bronchitis or bronchiolitis or without any broncho-pneumonia at all. And we believe that the "purulent bronchitis" then described was only one type of a condition which has recently shown itself to be remarkably protean.

The next point to emphasise is the absence of thick abundant bronchiolar pus in our own cases at the present time.

In the "purulent bronchitis" cases one of the most marked phenomena post mortem was the way in which thick yellow pus welled in smaller or larger spots and dots from all the bronchioles when the lung was cut. This peculiarity has been strikingly absent in the great majority of the recent Aldershot influenza cases, only small quantities of pus being expressible from the tubes, as a rule. And yet in precisely similar "influenza-pneumonia" cases seen in another command during the same epidemic the amount of pus expressed from the bronchioles was similar in amount to that of the "purulent bronchitis" cases. There is nothing constant about the lung lesions, and what may be true of a group of cases in one place may not hold good for another group of cases elsewhere, although the disease in general is clearly the same in both.

We will now try to indicate the kind of lesions met with, as a rule. It is not easy to depict these because they are so variable in the degrees and extent to which the following various conditions may be mingled together, namely:—

| | | |
|--------------------------------|---|---------------------------------|
| Broncho-pneumonia. | Multiple small areas of collapse. | Pleurisy. |
| Oedema. | Massive collapse. | Compression (by fluid). |
| Extreme congestion. | Formation of abscesses, generally small, but often multiple and aggregated. | Interstitial emphysema. |
| Diffuse hæmorrhage, not solid. | | Bronchitis and peribronchitis.* |
| Solid hæmorrhage. | | Gangrene. |
| Infarction. | | |

* Difficult to demonstrate macroscopically, but shown to be extensive microscopically.

One case may exhibit extreme congestion and oedema, with disseminated non-confluent broncho-pneumonia, subpleural hæmorrhages, and angry-looking purulent pleuritic lymph.

The next may have complete consolidation of both lower lobes by confluent broncho-pneumonia without any pleurisy at all.

The next may have not lobar consolidation but irregular masses which are more easily felt than seen, of deep crimson consolidation due to combined broncho-pneumonia, collapse, and hæmorrhage, scattered widely through all the lobes of both lungs, with or without acute pleurisy.

The next may have one entire lung apparently healthy, the upper lobe of the other pale and over-distended, and the remaining lower lobe

heavy, nearly but often not totally airless, of a consistence to suggest spleen rather than liver, and of a dull, deep-slate colour externally, still further suggesting a post-mortem spleen.

The next may have broncho-pneumonia, more or less extensive in the lower lobes with firmer wedge-shaped areas amongst the latter strongly suggestive of infarcts; whilst the upper lobes, free from broncho-pneumonia, may present from one to half-a-dozen or more typical infarcts, generally not large, of deep red colour, contrasting with the paler hue of the rest of the upper lobes.

In another case these infarcts may not be uniformly deep red, but pale, with crimson margins, due to the breaking down of the central parts into one or more incipient small abscesses.

Again, there may be no definite infarct, and yet over a more or less circumscribed region of one lobe, and often just below the pleura, as if they were originally in an infarct, one may see 20 or 30 pale yellow, slightly prominent areas, each of which turns out to be an incipient abscess or even a definite necrotic focus from which the contents can be washed out with a medium stream of water or readily expressed with the finger. It is from such superficial abscesses as these that perforation of both layers of pleura and consequent subcutaneous emphysema may arise; and if this is the sequence of events it is easy to understand why the development of subcutaneous emphysema generally prognosticates a fatal termination.

What the pathology of the infarcts is we cannot say with certainty.

Very possibly they are thrombotic and not embolic, in which case they point to severe changes in the vessel walls and perhaps in the blood itself. On the other hand, when one considers the frequency of purulent infection of the sphenoidal air cells (see below) one feels that thrombosis of venules in the neighbourhood of the base of the skull, where they are difficult to demonstrate either clinically or post mortem, is not an improbable event, leading perhaps to small but virulent septic emboli of the lungs with infarction and the formation of abscesses in the infarcts.

Perhaps both thrombotic and embolic infarcts occur; in either case their occurrence, not by any means in all cases but none the less in many, is a reminder that the vascular route of lung infection must not be forgotten. It seems highly probable that much of the lung mischief is due to direct invasion through the respiratory passages—from main bronchus to bronchioles and from the latter to the alveoli, bronchitis preceding broncho-pneumonia. But another route may be via the blood stream, thus accounting for the great severity of the infection and its high mortality.

Apart from actual infarcts, hæmorrhage into the deep lung tissue has been very common. Sometimes it is diffuse and difficult to demonstrate, owing to the already very deep crimson colour of the congested lung; but even then one can see it in the form of very dark, almost black, patches or ill-defined diffuse network, or a bigger localised mass which can be felt and which sinks in water.

The lower lobes have been affected very much more than the upper, though apical consolidation with confluent broncho-pneumonia is met with in a few instances.

With few exceptions the colour of the lower lobes has been deep crimson from extreme congestion, and very marked oedema of the lower lobes has been the rule, frothy blood-stained serous fluid pouring from the cut lungs when they are gently squeezed. This oedema is responsible for much of the increased weight of the lower lobes, and it occurs equally whether there is much broncho-pneumonia or little.

Although we have met with many cases with multiple small areas of necrosis or abscess formation, and many in which the lungs were pulped with ease by the hand, much in the same way as a decomposing spleen may be squeezed to pulp, we have met with no case so far of actual gangrene of the lung, and there has been no odour suggesting incipient gangrene. Perhaps this is due to the rapidity with which the disease progresses, so that patients have died before there has been time for true gangrene to develop.

We have met with no case of pneumothorax.

Pleurisy has been very variable in its incidence.

Quite a number of consecutive cases have exhibited acute pleurisy of the "lack-lustre" type with little or no fibrinous exudate and no free fluid, the acute pleurisy affecting one or both lower lobes, and much less often an upper lobe. Another group of cases have demonstrated no naked-eye evidence of pleurisy, although the intra-pulmonary lesions may be various and abundant. It has been exceptional to find much free fluid in the pleural cavity; one or two ounces of turbid blood-tinged fluid are present in a fair number of cases, but a large effusion has been exceptional post mortem. This is partly due to the recognition of fluid in the chest during life and its removal by aspiration, for fairly large pleuritic effusions have not been particularly uncommon in the wards. It is also partly due to the recovery of the whole of those cases in which the focussing effect of a copious effusion has been the patient's salvation.

The thin turbid fluid is clearly of the nature of an empyema, but it is not actual pus; it may become pus and need operation clinically, but we have not seen more than one or two cases of actual empyema in this disease post mortem. We think the empyema cases tend to do well for the reason stated above.

Interstitial emphysema in the form of a fine melon-rind network beneath the pleura has occurred in several cases; the condition is doubtless the result of inflamed alveolar walls giving way under the stress of coughing efforts.

Acute bronchiolitis is nearly always present.

The histological changes in the lung tissues must be postponed for a subsequent communication. We would only say here that in many sections there is an appearance in and around the bronchioles and inside the alveoli which at first makes one think that the paraffin has been imperfectly removed from the tissue. We thought at first that this was actually the cause of the appearance seen, but on further testing it seems that the appearances are due to a homogeneous structureless non-cellular exudate which fills the bronchioles and the peribroncholar tissues and forms as it were a plastering round the inside of the alveoli. It is not fibrinous like the exudate of croupous pneumonia. Presumably it is an albuminous exudate, coagulated in the process of fixation, and it is very similar to that which can be seen in fatal cases of poisoning by chlorine gas.

This albuminous exudate throws much light on the nature of the dreaded cyanosis. If the oxygen in the alveoli has to traverse this albuminous layer in addition to the alveolar wall before it can get to the hæmoglobin of the blood, it is evident why there is such marked anoxæmia.

Other Post-mortem Findings.

The larynx, trachea, and bronchi.—Starting at a variable distance down the trachea, often near the top of it and sometimes in the larynx itself, there is reddening and congestion of the mucosa, the depth of crimson increasing rapidly as one passes down the trachea, until in the main bronchi the dark-red colour is extreme.

That there is tracheitis and bronchitis in addition to whatever changes there may be in the lungs suggests strongly that, even if a blood infection does occur as well in the way we suggest, invasion of the respiratory tissues by extension from above downwards is pretty constant. In addition to deep crimson congestion there is often a granular appearance of the surface of the mucosa of the lower part of the trachea and of the main bronchi, suggestive of a small amount of exudate upon the surface. This may even reach the stage of giving the appearance of a very fixed milky film over a crimson base, but we have not seen the definite membranous exudate described by others.

When viewed in an oblique light the inflamed mucosa often exhibits multiple minute depressions, very shallow but well defined. These look like extremely small surface ulcers not penetrating the whole thickness of the epithelial covering, but they may, on the other hand, be merely normal unevennesses exaggerated by the congested swollen state. As yet we have not settled this point histologically.

The bronchial glands.—The lymphatic glands below the bifurcation of the trachea have been found enlarged and crimson from injection in practically every case, and as a rule they have been not merely large but very large.

In one case only had actual suppuration occurred in a big gland below the right bronchus; in this instance it contained fully 2 drachms of pus. It had not burst to produce mediastinal suppuration, though it seemed clear that this must have been the result if the patient had survived a day or two longer.

The glandular infection is not confined to those about the main bronchi; the glands in the root of each lung, in the superior and posterior mediastina, and the deep glands up the neck even as high as the cricoid cartilage also are often enlarged and deeply crimson from inflammatory congestion. We have not noticed similar involvement of glands elsewhere—for example, in the abdomen.

The thyroid gland.—Considerable enlargement of the thyroid gland has been the rule.

In one or two cases the swelling has not been less than that seen in an average case of Graves's disease, and the isthmus was enlarged in the same proportion as the lateral lobes. Presumably this enlargement of the thyroid is the result of the general toxæmia, corresponding in this respect to its enlargement in some other forms of toxic trouble; at any rate, it has been quite pronounced and almost constant in our cases.

The heart.—The most remarkable feature about the heart is the general absence of dilatation.

In quite a large proportion of cases there has been no trace of dilatation; in a fair number of others there has been some dilatation of the right side, but this has seldom been extreme, perhaps enough to cause the apex of the heart to be formed about equally by right and left ventricles. Most often the heart has appeared of normal dimensions and the apex has been formed entirely by the left ventricle. This absence of dilatation accounts for the clinical absence of orthopnoea.

Whether or no pericarditis ever occurs, we have not met with one case of it yet; and the same applies to endocarditis.

We have also been struck by the absence of subpericardial petechiæ, such as are generally met with in very toxic conditions.

The spleen.—In many cases no enlargement of the spleen has been evident; in many others it has been slightly enlarged—half as big again as normal, or, exceptionally, twice its normal size. It has never been pronouncedly big—never big enough, for example, to have been palpable below the rib margin.

In most cases the splenic substance has looked normal. In a few there have been multiple small areas of increased firmness and darkened colour, due apparently to quite small infarcts. In two cases there have been massive and unmistakable infarcts, one of which was already softening into an abscess. Whether these were embolic or thrombotic it is difficult to say, but in the absence of endocarditis their thrombotic nature seems the more likely.

In one or two cases there have been multiple ill-defined small areas paler than the rest just beneath the capsule, not firm like infarcts, not palpable at all, and yet on close inspection seeming to be very slightly swollen above the general contour of the organ. None of these have shown any tendency to break down, but there have been granules and tags of recent fibrin on their surface, so that they would appear to be foci of localised infection in the spleen with focal acute capsulitis over them.

The liver.—The liver has been in nearly all cases of a paler brownish-red colour than normal and moderately increased in bulk, but otherwise not obviously affected. The naked-eye changes are those common to any acute febrile illness of short duration. There has been no undue congestion, still less any nutmeg change.

The stomach, intestines, and vermiform appendix.—The alimentary canal has not exhibited any particular change.

We have had no case of pneumococcal or streptococcal peritonitis. The stomach and intestines have been relatively empty, for the patients have been too ill to take food. There has been no special tendency to over-distention of either the stomach or the bowels with gas. The vermiform appendix has not shown any notable change. We mention this because there has been a tendency elsewhere, we have been told, for certain of these influenza-pneumonia cases to develop acute appendicitis.

The kidneys.—These, in the fatal cases, have presented uniformly, the same, or approximately the same, appearances.

They are of slightly larger size than normal, the capsules peel readily, the stellate veins upon the surface are not markedly obvious, the colour is dull purplish red but not strikingly abnormal, but on cutting each kidney open in the ordinary way and leaving it to lie for a moment, the cut surface rapidly becomes obscured by dark red blood which wells slowly but steadily from every part of the organ, particularly from the glomerular region. On close inspection one can see the reddened swollen glomeruli fairly easily, and on pressing the organ the blood oozing becomes still more pronounced.

There is no evidence of cardiac passive congestion, the pyramids are not particularly more cyanosed than is the cortex, the whole condition is reminiscent of acute scarlatinal nephritis. After scarlet fever the large red kidneys are described as "blood-dripping"; in the present cases the kidneys are rather "blood-oozing" than "dripping," though if they are held up and gently pressed they drip blood slowly in fair amount.

Histologically there is confirmatory evidence of acute nephritic changes, particularly of the "acute glomerular" type. Details of this, as of other histological appearances in these cases, must be kept for another section; but that so many, if not all, of these fatal influenza-pneumonia cases have acute nephritis even though they have no oedema is, it seems to us, a point of much importance.

The sphenoidal and other accessory nasal sinuses.—We have examined the sphenoidal and ethmoidal air cells in 20 consecutive cases.

In one only was there no naked-eye evidence of disease of one or other or both, particularly of the sphenoidal which lends itself most easily to clear examination. In most of the 19 there was definite pale bright-yellow pus in the sphenoidal air cells: in several this pus squirted out on to the chisel used for opening the bone. When there was not thick yellow pus there was turbid serous fluid with angry red congestion of the lining membrane and adjacent parts. Doubtless this is one factor in the severe headache from which some of the patients complain, when they are not too ill to complain at all.

We did not examine the frontal sinuses or the middle ear as a routine. We are much impressed, however, by the frequency with which the sphenoidal air sinuses are infected or full of pus, and we must add in passing that we think this serves to emphasise the importance of the uppermost air passages, especially the naso-pharynx, in connexion with the disease. It is very unlikely that the sphenoidal air cells became infected secondarily to the lungs. In some cases the total length of illness had been so short that, for so much purulent fluid to have been present in the sphenoidal air cells, infection in that region must have been present from the start. When the frequency and severity of epistaxis is remembered, as well as the tendency to otitis media already commented on, the importance of the naso-pharynx as a likely site from which the whole trouble starts can hardly be exaggerated. The practical issue of this surmise should be insistence on the simple antiseptic toilet of the nose and throat—by nasal douche and gargle—once a day or oftener both by healthy individuals exposed to the danger of infection, and by the influenza cases themselves at the earliest possible moment before they are too ill to gargle or to douche.

The bacteriology of the sinus infection is dealt with lower down.

TREATMENT.

Treatment of influenzal cases naturally divides itself into two categories—that directed to the general run of simple uncomplicated cases, and that which has been tried for the virulent septicæmic group.

Uncomplicated Cases.

The first group is readily dismissed. Although a large number of different remedies have been recommended and vaunted as "specific" for the early treatment of influenza, consideration of their application with controls upon a very large scale has encouraged us to doubt whether the course of the disease is modified or abated in the slightest degree by any one of them. And in this connexion we would like to add our gradually increasing conviction that although common sense naturally dictates the greatest reasonable precaution possible even for the mildest case, yet the virulent type appears to originate *ab initio* and to develop in spite of early treatment. We have been struck so frequently by the change in character of the mild into the virulent type in spite of every care in the early stage that the conclusion appears to us irresistible that development of the virulent type was unavoidable.

FIG. 1.—This illustrates an early case in which the facial colour is frankly red, and the patient might not appear ill were it not for the drooping of the upper eye-lids, giving a half-closed appearance to the eyes.



FIG. 2.—This illustrates a pronounced degree of the "heliotrope cyanosis." The patient is not in physical distress, but the prognosis is almost hopeless.



FIG. 3.—This illustrates another type of the cyanosis, in which the colour of the lips and ears arrests attention in contrast to the relative pallor of the face. The patient may yet live for twelve hours or more.



As a routine procedure every case was given calomel gr. iv. and mag. sulph. 3 ii. on the following morning. As "specific" remedies we employed ol. cinnamon, aspirin, quinine, and sod. salicylate, and our ultimate conclusion has been that although drugs at this stage are of value as symptomatic remedies no value attaches to their application either in cutting short the duration of a mild attack or in preventing its development into the more serious type.

Quinine merits a word of special reference, since its advantage as a prophylactic has been loudly acclaimed. Whilst it is impossible to declare that no defence whatever is produced by this drug, we can at least publish the experience of seeing eight cases in men who had for a month previous to their admission to hospital with influenza been taking 10 grains of quinine regularly every day for malaria.

Finally, we would add a warning that the attempt to belittle the condition and allow the patient to return to his ordinary duties after a short febrile period has been poor economy. In very many cases—we are speaking of the present epidemic, as distinguished from the cases in June, which took a much milder course—a recurrence has occurred on the third day after the patient has been allowed to rise; and we consider it highly necessary to insist on at least three afebrile days before the patient gets up at all, and then three clear days up and dressed with relative inactivity before he is permitted to return to his unit even for light duties.

Treatment of the Virulent Type of Case.

In the earlier cases reliance was placed upon (1) the employment of oxygen in the orthodox fashion; (2) the administration of cardiac stimulants; and (3) venesection.

It is convenient to consider *venesection* first. Notwithstanding the absence of right-sided cardiac dilatation, the blue appearance of the patient seemed analogous to that of a typical pneumonic case in which venesection was indicated, and suggested this form of treatment. In no case has venesection produced the slightest improvement, not merely in the patient's general condition, but even in the degree of cyanosis. Apart from other considerations, the act of venesection itself is unsatisfactory. The blood flows with great difficulty, and only with prolonged perseverance has it been possible to extract the quantity likely to be of any benefit; in fact, the absolute failure to ameliorate the condition induced the conclusion that mere venosity of the blood alone was not the cause of the colour, but that some change had taken place in the blood itself which prevented its taking up oxygen, as, for example, the formation of methæmoglobin or even of some other pigment which had destroyed its capacity for carrying oxygen. Such a conclusion has, however, been completely disproved by the absence of any characteristic bands in the spectrum, and also by our experiments upon the oxygen-carrying capacity of the blood, which showed in all cases a condition fully equal to the normal, and in a few cases, presumably owing to polycythæmia, actually surpassed normal controls. Similarly, the employment of oxygen in the routine fashion 10–15 minutes at a time failed to produce even temporary relief. Reference will be made later to the continuous administration of oxygen.

With the failure of venesection, *saline infusions* were next adopted as a routine procedure in all "blue" cases. Subcutaneous, or rather intramammary, introduction was found, with one curious exception (*vide infra*), to produce no improvement. On the principle that a more immediate effect might be produced by intravenous medication, this route was substituted for the subcutaneous method, but with no greater success. And, again, no more favourable report is possible in the case of the simultaneous processes of venesection and intravenous injections, which other observers have claimed to employ with satisfactory results.

With the failure of saline infusions, addition of various substances to the saline solution was instituted on more or less empirical lines. On the principle that "acidosis" was playing a part in the production of cyanosis sodium bicarbonate in various quantities was used, and later glucose in 1, 2, and even 4½ per cent. strengths of solution.

The specific treatment by Mulford's antipneumococcal serum, administered intravenously, was tried in a few cases only owing to the comparative difficulty of obtaining large quantities, but no results accrued to encourage its employment on a large scale.

And, indeed, however lamentable such an admission must be, we must place on record the conclusion that not one

single line of treatment can be credited with the capacity of saving one of the virulent cases. Certainly desperate cases recovered though few in number, and in not one of these cases was any special line of treatment adopted.

A striking instance was afforded by one particular case whose condition was so extremely grave as to appear hopeless, so much so that it was felt to be unfair to adopt any of the special methods of treatment which were on trial, for failure in this case could hardly be a reflection upon the adequacy of the treatment. And yet this case was one of the very few extreme cases which recovered.

Other Forms of Treatment.

It has been mentioned that one curious exception occurred in the treatment by subcutaneous saline injection. In this instance suppuration occurred at the site of inoculation with sloughing of the tissues and the formation of an abscess, in the pus of which were identified *Staphylococcus aureus* and a streptococcus morphologically resembling the organism recovered from the heart's blood in some of the fatal cases. The patient made a complete recovery, although a week previously his condition had appeared hopeless. On the principle of forming other "fixation abscesses" of this kind, intramammary saline infusions were then resumed in another series of cases, the idea being that injury to the tissues by distension with the fluid might lead to the same happy result as in the case referred to. Not a single case, however, responded in similar fashion, nor was any improvement otherwise obtained. In a more heroic attempt to encourage abscess formation a live culture of streptococci obtained from the heart's blood of a fatal case were injected in a dozen cases, the dose administered being estimated at 15 millions. In not a single case did any suggestion of suppuration appear at the site of inoculation, and of the 12 cases upon whom this treatment was tried 8 died. It only remains to be added that the four who recovered were severe but not desperate cases, and it cannot be supposed that the culture contributed in any way to their recovery, as dozens of similar cases recovered without such treatment. Injections of turpentine were also employed, but without any advantage.

On the presumption that want of oxygen was the cause of the cyanosis and presumably of death, the continuous administration of oxygen by the Haldane apparatus, similar to that employed in "gassed" cases, was then undertaken. It must be added that only a certain percentage of cases are suitable for this treatment which, as recommended by Professor Haldane, must be practically continuous for many hours. The patient must be sufficiently intelligent and *compos mentis* to understand the persuasion that it is necessary for him to tolerate any slight discomfort for the sake of the ultimate gain, and the application is impossible in the case of patients with pulmonary secretions which soon foul the apparatus. We cannot state that any real advantage arose from this method of treatment. A few patients admitted a certain temporary gain in comfort at the end of several hours, although ultimately death ensued; the majority resented its application altogether.

The stimulant employed as a routine procedure was brandy, 4 oz. in 24 hours being administered. Strychnine was found to be unsuitable. It appeared to excite the patients unnecessarily and increased delirium; and whilst of no value to the sufferer was the cause of much annoyance and distress to other patients by the noise produced.

Sedatives were also employed, principally bromide, bromide and chloral, tinct. opii and morphine hypodermically, but the last named alone appeared to have any value in producing sleep or quietening delirium. Paraldehyde has been more recently tried, but at the time of writing no definite conclusion in its favour can be stated.

Emetics were administered in a few cases in which, from the chest signs, expulsion of purulent material might have been expected. Large doses of vinum ipecac. and vinum antimoniale proved useless; emesis was induced by apomorphine hypodermically, but no relief could be noted.

We may perhaps anticipate one criticism of our attempts to treat the virulent cases under consideration. It may be argued that the value or otherwise of no line of treatment can be estimated by its application to moribund or desperate cases. This, of course, is perfectly true, but, as we have found reason elsewhere to mention, it is impossible to estimate the severity or the probable development of severity of a case; and to apply any line of treatment indiscriminately to all cases on the principle that some might be

prevented from developing into the virulent type would be a useless method of estimating the value of the treatment, since the large majority of cases which spontaneously recover would have to be credited to the particular treatment under consideration. It cannot be argued that any time was lost once the suspicion arose that a desperate case was to be anticipated, and since it is obviously impossible to quote actual statistics under this head, we can only express a conviction that so far as our observation extended nothing prevents the development of the serious case from one apparently trivial, and nothing can claim to avert the course of its virulence once it has developed.

PROGNOSIS.

This leads us to say a few words on the question of prognosis. The great majority of cases of influenza, of course, recover. What particular percentage comes into this category it is not possible to decide, since the 3800 or so cases admitted to the Connaught Hospital during the recent epidemic afford no indication as to the total number of cases in the Command, and the difficulty of obtaining figures sufficiently reliable to be of value has been insuperable. The comparatively mild cases are treated in large numbers at their own units, only those who are clearly from the outset of comparative severity or those in whom pyrexia has persisted for 48 hours are sent into hospital. We would once again indulge in the consolatory reflection that we are convinced that no untoward results must be attributed to the deprivation of early hospital treatment in all cases; neglect of any case is of course to be condemned, but again we would add that the virulent case appears to be something *sui generis*.

As regards the prognosis of the admittedly serious case, we must confess to having found difficulties in the establishment of criteria, even after an experience of many hundred cases. Early in the epidemic we were persuaded that the cyanosed cases invariably succumbed. Later we were fortunately able to record that a certain, even if a small, number of these recovered; and yet the latter have been quite indistinguishable from the majority of the cyanosed cases who died. No criteria as to temperature, pulse-rate, or respiration-rate, and not even of general condition, can be absolutely determined. It is true that a rapid fall in temperature without any amelioration of symptoms was in a "blue" case almost always a precursor of death within 24 hours, and that the case with blue colour, when accompanied by a cold, clammy skin, might be considered to be beyond hope of recovery. And yet cases whom earlier in the epidemic we considered to be beyond redemption certainly recovered, encouraging the determination not to abandon hope entirely until the patient was unmistakably moribund.

An even more painful indication of one's prognostic deficiency was afforded by cases who, not only at their admission but even for several days of treatment in hospital appeared to run a comparatively trivial course and to give rise to no legitimate anxiety, suddenly took a turn for the worse, rapidly developed cyanosis, and died within a few hours of being only trivially ill.

PROPHYLAXIS.

A few final words may be added on the question of prophylaxis. We cannot refer to the greater question of dealing with the prevention of the epidemic or of limiting its spread once it has appeared, for these are matters for the consideration of sanitary officers, both relating to troops and the general public. The precautions taken in the hospital itself were the ordering of a gargle as a routine procedure twice daily for all in attendance upon the patients and for those patients who had exhibited the disease to a comparatively mild degree. The solutions utilised were either pot. permanganate 1:4000 or tinct. iodine 1 drachm to the pint. In addition all medical officers, nurses, and orderlies were instructed to use a gauze mask around the nose and mouth whenever they were in attendance upon patients.

It may be added that not a single case developed in five special wards of the hospital devoted to tuberculous and neurasthenic cases, although these patients were from force of circumstances being visited by medical officers who were in attendance elsewhere upon influenza patients, and that in the large venereal division of the hospital only two or three sporadic cases appeared—these had apparently entered the hospital with the disease—who were immediately segregated,

and no instance of infection of other patients occurred. In the Detention Barracks at Aldershot, in which every patient occupies a separate cell in which he takes his meals, only coming into contact with his fellow inmates when he parades in the open air, not a single case developed. Incidentally, to complete the story, it must be added that the medical officer who visits these barracks daily is attached to the Connaught Hospital, and in addition to other duties has been in charge of influenzal patients.

PATHOLOGY.

This investigation was carried out with a view to establishing, if possible, the identity of the causal organism or organisms and their distribution in the body in cases of influenza. Furthermore, the work appeared profitable if it were only to establish or disprove the connexion between the present epidemic and what had previously been described under the term "purulent bronchitis."

The most striking feature of the results obtained is the frequency with which streptococci were isolated, while the *Bacillus influenzae* could not be demonstrated with equal constancy. These streptococci fell into two groups: (1) a long-chained streptococcus; (2) a small short-chained streptococcus exhibiting a preponderance of diplococcal forces. This latter organism appeared to have some claim to individuality and will be referred to as a "diplostreptococcus."

Before describing the organisms in detail the pathological and bacteriological findings will be considered.

Throat swabs.—The material was taken from the nasopharynx with a West swab and inoculated on to blood-agar.

| | Mild cases. | | | | | Severe cases. | | | | | Total. |
|-------------------------------|-------------|---|---|---|---|---------------|---|---|---|----|--------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| <i>Pneumococcus</i> ... | + | - | - | - | + | - | - | - | + | - | 3 |
| <i>M. catarrh. group</i> ... | + | + | + | + | + | + | + | + | + | + | 7 |
| <i>Strept. longus</i> ... | - | + | + | - | - | + | + | + | + | + | 7 |
| <i>Diplostreptococcus</i> ... | + | + | + | + | + | - | - | + | + | + | 7 |
| <i>B. influenzae</i> ... | - | + | + | + | - | - | - | - | + | + | 5 |

Profuse expectoration in these cases was uncommon, so that it was not possible to draw any conclusion from the small number of sputa examined.

Blood cultures.—Blood cultures were made in glucose broth in 10 cases shortly before death, but although several dilutions were tried only 1 case gave a positive result; the organism in this instance was the *Streptococcus longus*.

Urines.—Examinations gave the following results:—

| Cases. | Albumin % | Deposit. | Culture. |
|-----------------|-----------|--|------------|
| 1. Moribund ... | 0.02 | Granular and cellular casts. | No growth. |
| 2. " ... | 0.1 | No casts. Transitional epithelial cells. | " |
| 3. Severe ... | 0.5 | Transitional epithelial cells. | " |
| 4. " ... | 0.1 | Cellular casts and leucocytes. | " |
| 5. " ... | 0.4 | No casts. Transitional epithelial cells. | " |

It is remarkable that although in some cases casts were abundant, red blood-cells were not identified in the urinary deposit. Examination of the kidneys from these cases furnished no evidence of old-standing renal disease.

Leucocyte counts.—The following are the total leucocytes per c.mm. and the differential counts (P., polymorphonuclears; L., lymphocytes; L.M., large monocytes; E., eosinophiles):—

| Case. | Total. | P. | L. | L.M. | E. |
|---------------------------------|--------|-----|-----|------|----|
| 1. Severe ... | 6200 | 54% | 39% | 6% | 1% |
| 2. Moribund ... | 5890 | 68% | 26% | 5% | 1% |
| 3. Slight cyanosis... | 4650 | 44% | 47% | 7% | 2% |
| 4. Mild ... | 4960 | 66% | 30% | 3% | 1% |
| 5. Moribund ... | 4960 | 70% | 26% | 2% | 2% |
| 6. Bronchitis. Slight cyanosis. | 6820 | 86% | 11% | 2% | 1% |

In the last case bronchitis with purulent expectoration was present, which may account for the higher polymorphonuclear value, as compared with the other cases.

Cerebro-spinal fluid.—In two severe cases the fluid was clear, pressure normal; albumin (1) 0.006 per cent., (2) 0.0009 per cent.; cells normal; organisms negative; culture, no growth. In the absence of signs of meningitis or meningism this examination was not pursued to any

length, and the above results are typical of the total number investigated.

Oxygen capacity of blood.—This was in control case and four severe cases as follows (oxygen per 100 c.cm. of blood):—

| | | | | |
|----------------------------|----------------|----------------|----------------|------------|
| Control. | 1 | 2 | 3 | 4 |
| 18.5 c.cm. ... | 17.0 c.cm. ... | 20.5 c.cm. ... | 18.5 c.cm. ... | 18.0 c.cm. |
| Hæmoglobin = 105 per cent. | | | | |

These results were obtained by using Haldane's potassium ferricyanide method. It was not possible in the circumstances to estimate the blood carbon dioxide or alkali reserve. The absorption bands of methæmoglobin were not detected in the samples of blood examined.

Apparently the cyanosis in these cases may be attributed to the inadequate functioning of the pulmonary epithelium.

Bacteriological findings in post-mortem material.—The following organisms were found:—

| Material. | Number of cases. | Pneumococcus. | Diplo-streptococcus. | Strept. longus. | B. influenza. |
|-------------------|------------------|---------------|----------------------|-----------------|---------------|
| Heart blood... | 28 | 2 | 9 | 3 | 2 |
| Spleen | 28 | 1 | 2 | 3 | 0 |
| Lungs | 28 | 8 | 11 | 10 | 7 |
| Sphenoidal sinus. | 12 | 6 | 4 | 6 | 3 |
| Ethmoidal sinus.. | 5 | 3 | 2 | 0 | 2 |

Description of the Organisms Isolated.

The characteristics of the organisms isolated are given below.

The long-chained streptococcus grew well on all ordinary media, and on agar formed discrete pin-point colonies. On blood agar hemolysis occurred in all cases. No clot was formed in milk during three days' incubation, but acid was produced in lactose and glucose media.

The "diplostreptococcus" also grew well on all ordinary media. On agar the colonies were larger than those of the long-chained streptococcus and showed flattening of the surface and a spreading margin, which did not appear raised. Confluence of the colonies was seen in some cases. Hemolysis occurs to a slight extent.

Ancillary action of the *Staphylococcus pyogenes aureus* was very marked, resulting in increased size of the diplostreptococcal colonies.

A turbidity was usually formed in broth during the first 24 hours of incubation, but within three days flocculi settled to the bottom of the tube, leaving the supernatant fluid clear. The organism is Gram-positive, but in a few instances some members of a chain have failed to retain the Gram stain. Involution forms appeared in old cultures. A capsule was not demonstrated by Muir's staining method.

The pleomorphism exhibited by this organism is a striking feature: in 24 hours' pure culture on agar many diplococcal forms appear, together with short chains of coccoid individuals. After repeated subculture the streptococcal forms preponderate. The formation of chains does not appear to occur more readily in broth or other fluid media than on agar.

This organism has been found in pleural exudates during life and showed diplococcal and streptococcal forms, while pure cultures obtained from these fluids again gave evidence of pleomorphism.

The action on carbohydrate media has been uniform: acid is produced in glucose and a dense clot is formed in milk; there is no action on lactose, mannite, saccharose, or inulin, nor has gas been formed in any of the media used. The organism is not bile soluble. Agglutination reactions with antipneumococcus sera Types I., II., and III. were negative.

Four cultures from heart blood and two from the lung were inoculated subcutaneously into mice, but in no instance did death occur, nor was a local suppurative lesion produced.

In one case following subcutaneous saline injection abscess formation occurred, and it is interesting to record that the organisms isolated were the "diplostreptococcus" and the *Staphylococcus pyogenes aureus*.

The "diplostreptococcus" appears to resemble the *Streptococcus brevis*, although the latter is not usually regarded as pathogenic to man. Perhaps it would be best to use the name *Streptococcus brevis* generically; the "diplostreptococcus" could then be regarded as a species if its consistency of action and conformity of type could be established. In some respects the diplostreptococcus resembles the *Streptococcus viridans*, but the characteristic greenish hue of the colonies was not observed.

Gruber and Schüdel, and also Bernhardt and Meyer, have recently described a diplostreptococcus which occurred in the internal organs of cases examined post mortem. They regard this organism of decisive importance in the causation of acute pulmonary conditions and fatal complications of influenza.

Histology.

The histological findings in the lungs, kidneys, and liver are now briefly described.

The lungs.—In the majority of cases congestion and oedema were the most marked changes recognised in the post-mortem room, while a definite broncho-pneumonia was of less frequent occurrence.

In the former type of lung the alveoli contained a scanty fibrinous exudate with erythrocytes and polymorphonuclear leucocytes. The bronchial epithelium was thickened and proliferating, and leucocytic infiltration of the peribronchial tissue was present. Dilatation and

engorgement of the peribronchial blood-vessels was a marked feature. These appearances correspond with those seen at an early stage of broncho-pneumonia.

Sections examined from lungs at a later stage showed a confluent broncho-pneumonia. The alveoli were completely filled with sero-fibrinous material, in which numerous polymorphonuclear leucocytes and pigmented catarrhal cells were seen. The smaller bronchi contained masses of leucocytes and epithelial cells embedded in a sero-fibrinous matrix. In the more congested areas the alveolar septa in many places had given way and the exudate had become confluent.

The kidneys.—Cloudy swelling of the tubular epithelium was seen in some areas. The glomeruli were engorged with blood, and Bowman's capsule was thickened in most of the specimens examined. In a few instances a clear exudate was seen within the Malpighian bodies. There was no evidence of interstitial changes or endarteritis.

The liver.—The liver cells in the portal areas showed cloudy swelling and fatty degeneration. No cellular infiltration was evident in the tissues surrounding the portal vein. Amyloid change was not seen in the arterial zones.

SUMMARY.

1. The recent pandemic of influenza has included a large number of cases of septicæmia or toxæmia with a high degree of mortality.

2. These severe cases appear definitely related to the cases of "purulent bronchitis" which have been described as occurring in various parts of the country and in France. The essential feature is an infection by the *Bacillus influenza* with a secondary infection by some other organism. The existence of copious purulent expectoration is only an incident which may or may not be present and which has been singularly absent in the recent pandemic.

3. The secondary organism in question is the pneumococcus, *Streptococcus pyogenes longus*, or a "diplostreptococcus," the virulence of which appears to be exalted by the initial influenzal infection.

4. The characteristic features of the septicæmic type of case are variable lung symptoms, ranging from slight bronchitis to lobar pneumonia, very characteristic heliotrope lividity, dyspnoea, or rather polypnoea, and very rarely orthopnoea. These, with other so-called complications of influenza, such as pleurisy, nephritis, and others of lesser import, are evidence of the septicæmia or toxæmia referred to.

5. The relative frequency of the septicæmic type of case cannot be estimated with any degree of accuracy. The mortality of the septicæmic cases would appear to be as high as 90 per cent. at the beginning of an epidemic, falling to 50 per cent. at its termination.

6. Infection takes place in the upper respiratory passages, and involves the accessory nasal sinuses, where a septic sinusitis develops. From this and possibly other foci as yet undetermined, the toxæmia or septicæmia originates.

7. In view of the large number of instances in which the diplostreptococcus has been isolated in pure culture from the heart's blood and internal organs immediately after death, it is concluded that this organism plays an important rôle in the fatal cases.

8. The very large majority of cases of influenza run an uncomplicated course, terminating in from 3 to 14 days. No treatment has been found to be of any value in aborting an attack, or in preventing its development into the virulent type.

9. The large majority of cases of septicæmic type die in spite of any form of treatment. Cases have recovered who have been given no specific treatment of any kind.

We desire most gratefully to express our obligation to Major-General E. G. Browne, C.B., C.M.G., A.M.S., D.D.M.S., Aldershot Command, who has not only encouraged the undertaking of this investigation, but has often at great personal inconvenience assisted in the arrangements in various parts of his Command, arrangements which have placed at our disposal an enormous amount of material which would otherwise never have been seen.

Our thanks are also due to Lieutenant-Colonel W. Turner, C.M.G., R.A.M.C., O.C. Connaught Hospital, Aldershot, where the greater part of the investigation, clinical and pathological, has been performed. We are also greatly indebted to Colonel Robertson, C.A.M.C., O.C. Bramshott Military Hospital; Lieutenant-Colonel Cole, C.A.M.C., O.i/O., Medical Division, Bramshott Hospital; Lieutenant-Colonel J. Tidbury, O.C. Woking Military Hospital; and Captain Means, of the United States Medical Service, all of whom have generously placed at our disposal the patients under their command and care.

To the medical officers attached to the hospitals where investigations have been performed we offer a general expression of gratitude for their invaluable coöperation.

NOTE ON THE COMPARATIVE PATHOLOGY OF INFLUENZA.

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TO THE ITALIAN EXPEDITIONARY FORCE.

THE comparative pathology of an infective disease is always interesting, and it has in many cases thrown light on the modes of infection in man. During the present pandemic of influenza I have not met with any reference to the occurrence of a similar malady in either domestic or wild animals. It is possible that some animals have been affected, and it would be of interest to ascertain if any localised epidemics of influenza in animals have been observed. The pulmonary complications, as seen this year in man, alike in England, France, and Italy, due to mixed infections of the respiratory organs, so closely resembled those observed in an epidemic in horses which came under my notice more than 20 years ago that a brief account of it may be of interest at the present time. I write entirely from memory, but the main features of the epidemic were as follows:—

A certain railway company had a number of valuable horses which were kept in large stables. Two long rows of stalls were arranged in each of the buildings, which were well ventilated and kept in excellent condition. Many of these horses were rapidly attacked by an acute illness with symptoms of nasal catarrh which was accompanied by a clear watery discharge from the nostrils. The majority of the horses made a good recovery, but some of them developed symptoms of acute pulmonary disease and died. Post-mortem examination by the veterinary surgeons in attendance showed that death was due to acute lobular pneumonia, complicated by pulmonary abscesses which developed in the areas of consolidated lung. A puzzling feature of the epidemic was the irregular distribution of the cases. The malady did not spread in sequence from stall to stall, but cases occurred at irregular distances from each other in the same stable.

As several valuable horses had died and the disease continued to spread, I was asked to investigate the cause of the epidemic and to give advice as to the most suitable means to be adopted in order to stop the further spread of the infection. On making a bacteriological examination I obtained from the nostrils of horses suffering from the acute nasal catarrh cultures of a small bacillus closely resembling, if not identical with, Pfeiffer's bacillus. The same bacillus was recovered from the patches of broncho-pneumonia in the lungs of a fatal case. In this case there were several abscesses which had formed in the consolidated areas of the lung. Cultures prepared from the pus in these abscesses yielded growths of *Staphylococcus albus*.

It therefore was evident that the disease was primarily an acute catarrhal infection of the respiratory passages closely resembling influenza in man. In some cases the same bacillus invaded the lung and broncho-pneumonia supervened. This was complicated by a secondary staphylococcal infection which caused a rapid breaking down of the consolidated lung and the formation of localised abscesses.

In human influenza the usual mode of spread appears to be by aerial convection of the infection to those in the immediate neighbourhood of the patient, as was so clearly shown by Major Michael Foster and Major Anstey Cookson in the case of a limited outbreak in a surgical ward.¹ In the epidemic in horses the irregular spread of the disease was apparently due to the use of dry moss litter as bedding, fine particles of which could be seen floating in the air when illuminated by a ray of sunlight. The nasal discharge from an infected horse dripped on to this bedding, where it dried and was carried to all parts of the stable by light currents of air.

The company was advised to remove all the moss-litter, and after thorough cleansing to wash out each stable with a disinfectant and to use sanitas sawdust as bedding. This was done in each stable while the horses were out at work, with the result that the epidemic ceased at once and no more horses were lost.

The chief points of interest in this epidemic were the resemblance of the disease to human influenza, the rapidly fatal results of the acute pulmonary complications caused by a double infection of the lung, and the part played by dust in increasing the range of aerial convection from one animal to another. The range of aerial convection in human influenza is usually short, but in the management of patients it is advisable to keep the air of the sick room as clean and as free from dust as possible, and to disinfect all handkerchiefs and spittoons just as in cases of open pulmonary tuberculosis.

¹ THE LANCET, 1918, II., 588.

B. MULTIFERMENTANS TENALBUS.

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CAPTAIN, M.O., U.S.A.

(From U.S.A. Base Hospital No. 5.)

THE bacillus described here was isolated from a case of gas gangrene of the arm which recovered promptly upon excision of infected muscle. An account of the characteristics of the bacillus has been undertaken because—

1. The bacillus appears to differ from the anaerobes described in the literature. (The references available include the report on anaerobes of the British Medical Research Committee, by Dr. James McIntosh, and the monographs of Captain H. G. M. Henry and of Weinberg and Seguin.)

2. At a certain stage the bacillus produces swollen and irregularly staining forms closely resembling the so-called "citrons" usually believed to be characteristic of *B. vibrio septique*.

3. Certain facts suggest that the bacillus may be of importance in symbiosis with *B. sporogenes* in producing local muscle infections. This is merely a possibility, however, and it seems on the whole most probable that the pathogenic importance is slight and of rare occurrence.

The author is greatly indebted to Dr. McIntosh for the serological reactions as well as for his confirmation of the impression that the bacillus differs from those described in his report.

CASE.—Pte. X. Patient received a perforating explosive wound of left forearm, with fracture of ulna. Excision of muscle for gas infection at C.O.S. Entered base hospital next day with localised gas infection of forearm. Immediate operation with excision of portions of flexor and extensor tendons, which were found gangrenous. No further evidence of gas infection.

Cultures.—A swab was taken at operation from the gangrenous muscle in the depths of the wound and planted in chopped meat medium.

Technique of isolation.—After growth for three days the culture was streaked on slants of Stelti's egg medium made with trypticised broth, and incubated in McIntosh and Fildes jars. This method has been found to give excellent and rapid growth of all anaerobes tried, including *B. edematis*.

Two sorts of colonies were immediately evident: (1) those typical of *B. sporogenes*; (2) very elevated, sharply defined, circular yellow colonies, turning white on the second or third day. Several of each of these two kinds of colonies were fixed where widely separated, emulsified (by shaking with sand in sterile salt solution), and replated separately. After apparently pure cultures were obtained, this immediate replating of isolated colonies was repeated several times. (The first attempt gave two colonies free from *B. sporogenes*, as tested by growing in chopped meat, thus indicating the efficiency of the plating method.) No other organisms than *B. sporogenes* and the bacillus were obtained. It is extremely improbable that *B. welchii*, at least, was overlooked, because the experiment was tried of planting *B. welchii* and this bacillus together in chopped meat and streaking on egg, and invariably *B. welchii* gave many times the number of colonies, which were easily distinguishable.

The cultural characters were as follows:—

Anaerobiosis.—There is no growth aerobically on slants. There is an extremely slight sediment in cultures planted in glucose bouillon which has been freshly shaken with air. The bacillus proves to be a fairly strict anaerobe.

Motility.—The bacillus is very actively motile in the condensation water of egg slant. In chopped meat its motility is less marked. It is actively motile in plain bouillon, but non-motile in glucose bouillon.

Proteolytic action.—There is no demonstrable proteolysis from putrefactive cultures grown on egg for long periods. Chopped meat shows no evidence of digestion. In milk the curd undergoes softening, but a diminution in volume is questionable. There is no blackening of meat or egg.

Saccharolytic action.—Glucose, lactose, saccharose, maltose, glycerol, inulin, raffinose, and salicin are fermented vigorously. There is no action on dulcitol or mannite.

Indol production.—No indol is produced.

Odour.—Faint and not characteristic. No special odour of butyric acid in milk cultures.

Hemolysis.—Surface colonies on blood agar produce a definite ring of hemolysis in 24 hours.

The gross appearance of cultures is described below.

Chopped meat. Within 24 hours gas is produced. There is no blackening or digestion of the meat even after long incubation, and no definite change in colour.

Glucose bouillon.—In 24 hours there is a heavy flocculent precipitate. The medium is slightly cloudy from small floating flecks. The flocculent precipitate is easily broken up by shaking but quickly settles out again. Gas is produced and appears throughout the culture when it is shaken (as in champagne).

Plain bouillon.—The medium is diffusely cloudy with a slight sediment, somewhat flocculent.

Milk.—The usual reaction in 24 hours is a thickening of the consistency, apparently from the precipitation of the casein, with the evolution of gas, which produces a coarsely bubbly foam $\frac{1}{2}$ in. to $\frac{1}{4}$ in. deep, over the surface. With further incubation the casein precipitates more completely, settles to the bottom, and leaves a cloudy fluid above.

With a heavy inoculation or under exceptionally good conditions a more vigorous reaction takes place, and in 24 or 48 hours the culture closely resembles the reaction with *B. welchii*. There may be a floating clot filled with bubbles. The clot is softer than with *B. welchii* and is easily broken up.

The nature of colonies is as follows:—

On glucose agar surface colonies in 24 hours appear greyish, 2-3 mm. in diameter, raised, with sharp edges and somewhat irregular outline. A hand-lens shows a clear translucent stratum in which float white flecks. The flecks are not definitely distinguishable by the naked eye. They form triangular or other straight-sided geometrical figures, and thus present a crystalline appearance.

In two days the colony appears whiter. The hand-lens shows more numerous flecks, which have increased in size. In some colonies the whole centre is opaque and white, shading gradually off to a clear translucent border.

In three days nearly the whole colony is a dense, opaque clear white with a narrow translucent rim, which may still show the crystal-like flecks, often arranged radially. The consistency is sticky, stringing out when picked, but not adhering to the agar.

As time goes on the colony grows, reaching a size of 5 mm. It heaps up so that it becomes quite thick, with rather steep sides. The edge is clear and sharp. The colour is opaque pure white.

Deep colonies on glucose agar are small, white, opaque, and irregular in shape. They are often lenticular, with a horn-like projection from one side, or reniform, with a projection from the "hilus." They are $\frac{1}{2}$ mm. in size. In two days they enlarge a little, there is a tendency to form large gas bubbles, which tear up the agar, giving a confluent growth about their periphery. Often the growth extends as a white film over the under surface of the agar.

On blood agar the surface colonies are smaller and more opaque at the start and do not show clearly the crystalline flecks. They tend to be flatter, not to increase in size, and to become level with the agar. They have a definite hemolytic zone.

Deep colonies on blood agar resemble in shape those on glucose agar, but gradually become a Vandyke brown, thus standing out sharply from the pale yellowish red agar.

Colonies on egg medium (whole egg and tryptic broth inspissated in slants).—In one day the colonies are 1-2½ mm., raised, yellow, with sharp, regular edge. They are very coherent and elastic, and adhere closely to the medium. A platinum loop may be rubbed with moderate pressure over a colony without affecting it visibly. If part is loosened and pulled away it stretches out, and finally snaps after it the rest of the colony in a mass. The second or third day the colony is larger, and is grey or white, with a narrow colourless or light yellow border. It is now sticky, but not so adherent or elastic.

The colony increases to a size of 4-6 mm. and to a thickness of 2-3 mm., and becomes a pure opaque white. There is never blackening or digestion of the egg.

The colonies on this medium are easily distinguishable from those of *B. welchii fallax vibron septique, oedematis, aero fetidus*, or any of the proteolytic group.

The morphology of the organism is next described.

The bacillus is more slender than *B. welchii*, and varies in length according to the conditions of the culture. (Fig. 1.) The short forms

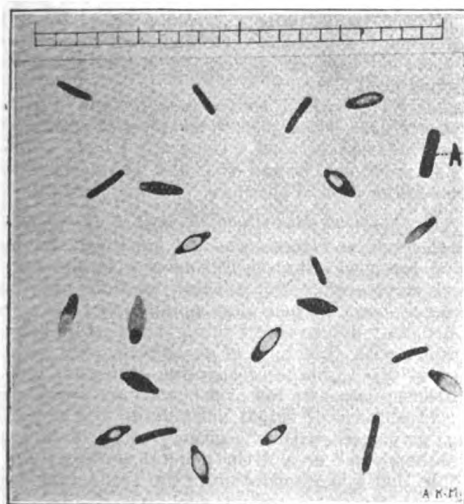


FIG. 1.—Shows the bacilli, and the most typical forms occurring in the evolution of the spores. From a 24-hour colony of *B. multifementans tenalbus* on a trypt-egg slant. At A is drawn in for comparison a *B. welchii* from a similarly grown culture. Scale in microns.

tend to be slightly curved; the long forms usually show sinuous distortions. The ends are very rounded and occasionally almost conical. The bacillus resembles *B. vibron septique* in shape, but under the same conditions of culture has a larger proportion of short and swollen forms. It is Gram-positive in very young cultures, but quickly becomes Gram-negative in places or feebly Gram-positive throughout, and finally within 2-3 days, is usually Gram-negative. A one-day culture shows all variations from the Gram-positive to Gram-negative forms. The bacilli usually have a granular appearance and are feebly refractive. They do not appear as clear cut as *B. welchii* or *B. vibron septique*. There is no capsule.

Occasionally bacilli occur end to end, but long chains are not found. Long threads are produced on agar. There is no special grouping on slides, except in the case of the early sporulating forms, which tend strongly to stick together in dense masses.

The most striking feature is the rapid production of large numbers of swollen forms and spores. (Fig. 2.)

These are produced in greatest profusion in cultures on egg medium but occur in bouillon, in milk, or on agar.

Usually in forming the spore the bacillus swells centrally, with a gradual tapering off to the ends. At this stage it becomes Gram-negative and faint-staining, the process starting at the end which is to

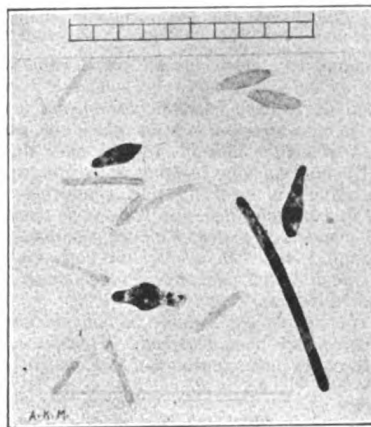


FIG. 2.—Shows various swollen and irregularly staining forms, a long rod, and numerous Gram-negative bacilli. From a 3½ day colony of *B. multifementans tenalbus* on a trypt-egg slant. Scale in microns.

produce the spore. A deep-staining Gram-positive spherical mass appears at the opposite end. Soon after a large oval refractile sub-terminal spore appears, the remainder of the bacillus gradually fading out and disappearing. A 24-hour culture in milk usually shows practically no other forms but the swollen or sporulating bacilli. Numerous minor variations from this process occur. The bacillus may become pear-shaped or barrel-shaped, or may elongate. The spherical chromatic dots often appear at each end. The decolorisation often proceeds irregularly, leaving Gram-positive dots or bands. These forms resemble closely the corresponding stages of *B. vibron septique*. The swollen forms and spores, however, are produced in much greater profusion than in the case of the vibron, and are also produced earlier. A one-day culture on egg medium closely resembles a two- or three-day culture of *B. vibron septique* on the same medium. Occasionally sub-terminal or central spores develop quickly in a bacillus before it has swollen or become Gram-negative.

Serological reactions.—One bacillus is agglutinated neither by the serum of *B. vibron septique* nor *B. chauvæi*. For these findings I am under obligations to Dr. McIntosh, of the British Medical Research Committee.

Identity.—Since the bacillus appears to differ from those described in the literature it has been named, provisionally at least, *B. multifementans tenalbus*. The first name suggests the wide fermentative properties; the second an artificial condensed word compounded of the terms *tenax* and *albus*, the chief characteristics of the colonies.

Definite differences in colony characters, morphology, serological reactions, and pathogenicity distinguish it from *B. vibron septique*.

The bacillus differs from *B. II.* of Ghon and Sachs (1909) by complete absence of tendency to grow in long chains in liquid cultures, as well as in its fermentation reactions.

From *B. chauvæi* it is distinguished by its serological and fermentative reactions.

B. emphysematis maligni of Wicklein was a proteolytic organism.

From *B. welchii, oedematis, fallax, Hibler IX., butyricus*, and the proteolytic group the differences are obvious.

It appears to be closely related to, if not included in, the somewhat ill-defined group of motile fermenting anaerobes called by Grassberger "*saccharolyticus mobilis*."

Pathogenicity.—Experiments were carried out to determine the pathogenicity of the organism.

Technique.—The sites of injection were shaved and treated successively with alcohol, ether, and iodine. Unless otherwise stated, the cultures were grown 24 hours in 1 per cent. glucose bouillon and injected intramuscularly in the thigh. The culture of *B. sporogenes* was isolated from the case described above.

Protocols.—Rabbit I.: 2 c.cm. of *B. multifementans*. No evident effects.

Rabbit II.: 1½ c.cm. of *B. sporogenes*. No effects.

Rabbit III.: 1 c.cm. of *B. sporogenes* and 1 c.cm. of *B. multifementans*. Death in 20 hours. Autopsy.—Local muscle infection, confined to muscle group injected. Cultures of both organisms recovered from the muscle. H. +. Blood cultures negative.

Rabbit IV.: 9 minims of a 2-day chopped meat culture of *B. multifermentans*. No effects.
 Rabbit V.: 1 c.cm. of a 9-day meat culture of *B. multifermentans*. No effects.

Rabbit VI.: 1½ c.cm. of *B. sporogenes* + 1 c.cm. of *B. multifermentans*. Within 18 hours rabbit appeared sick, with marked local swelling and tenderness. Rapid recovery.

Rabbit VII.: 1½ c.cm. of a 36-hour culture planted with *B. sporogenes* and *B. multifermentans* together. No definite effects.

Guinea-pig I.: 1 c.cm. *B. sporogenes* + 1 c.cm. *B. multifermentans*. In 18 hours marked local swelling. Did not appear sick. Killed in 36 hours. Swelling still present. Autopsy.—Slight muscle infection of group injected.

Guinea-pig II.: 1 c.cm. of a culture planted simultaneously with *B. sporogenes* and *B. multifermentans*. In 20 hours moderate local swelling, still evident after 36 hours.

Rat 1.—3 minims 9-day meat culture *B. multifermentans*. No effects.

Summary of animal experiments.—There appeared to be a production of lesions with *B. sporogenes* and *B. multifermentans* in combination which were not produced with larger doses of either alone. In one case death was produced in 24 hours. The lesions, as a rule, appeared to be local, consisting in swelling and tenderness for a short period and in a muscle infection for one to three days.

B. multifermentans alone in moderate doses seems to be non-pathogenic; with *B. sporogenes* both become able to cross the threshold of the animal's resistance, but do not give extensive lesions.

These experiments were made a considerable time after both organisms had been isolated. Therefore they may not represent the true pathogenicity of the bacilli.

SPINAL ANÆSTHESIA.¹

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SPINAL anæsthesia has now been used in this country with increasing frequency for the last 10 or 12 years. It has, in spite of considerable opposition, attained a position as one of the recognised agents for producing anæsthesia. A large number of cases have been collected by various observers, and I think we may hope that the time has now been reached when a comparison of experiences may be of considerable use to us all in deciding the exact type of case in which this form of anæsthesia is most valuable.

It is not my intention in opening this discussion to enter into the technique of spinal anæsthesia, which is now very well known, but rather to speak of my own experiences of its use in a considerable number of cases.

I have always used stovaine except in about 250 cases in which novocaine was employed. After this trial I gave it up, because although novocaine produced perfect anæsthesia it does not produce a muscular relaxation equal to that produced by stovaine.

Effect of Density of Solution and Posture on Diffusion.

A 5 per cent. solution of stovaine, the density of which was increased by the addition of 5 per cent. of dextrose, was used in most cases. As this solution is heavier than the cerebro-spinal fluid the position and extent of the anæsthesia obtained with it can be regulated by the position of the patient during the injection. There is no doubt that although the stovaine-dextrose solution is diffusible its movements are controlled by gravity for a few minutes after injection. For instance, if a patient is placed upon his right side, with his pelvis slightly raised, so that there is a good steep slope from the third lumbar vertebra down to the mid-dorsal region, and the injection is made between the second and third lumbar vertebrae, this fluid will sink downwards in the spinal canal to the mid-dorsal region, producing an anæsthesia of the right half of the body before producing any effect upon the left side, and, moreover, if the patient is kept in this position for some few minutes before being turned on to his back the anæsthesia will be more complete on the right side—that is to say, it will extend higher on the right side than on the left and it will last longer on the right side. Muscular power will return first on the left side, and the patient will be able to move his left leg before he moves his right leg.

If immediately the stovaine has flowed to the mid-dorsal level the patient is turned upon his back it will flow across

the mid-line, and there will be practically no difference between its effects upon both sides of the body. Or, again, if the injection is given with the patient in the sitting posture the stovaine-dextrose solution will sink downwards in the theca and produce an anæsthesia which is more or less limited to the sacral plexus.

For young children I found that a dextrin-stovaine solution is less diffusible, and consequently the upper limit of the anæsthesia and muscular paralysis was more sharply defined, which is naturally a great advantage, as in the short spinal cords of young children the vital centres are not far removed from those parts of the cord in which it is necessary to produce anæsthesia.

In a few hundred cases a solution of stovaine in saline was employed. It was found that, irrespective of the position of the patient, the stovaine diffused about 10 in. upwards from the point of injection and equally on both sides of the body. It was with this solution impossible to limit its action or to increase it beyond this point except by increasing the dose, and then only very slightly. The anæsthesia produced by the saline-stovaine solution was found to be more transient than in those cases in which the denser solution was used and it was generally found necessary to employ almost double the dose of stovaine to produce equally long anæsthesia.

Position of Patient After Injection.

It might at this point be appropriate to say a few words in regard to the position of the patient after the introduction of the stovaine. I have already remarked that the dextrose and dextrin-stovaine solutions are mobile in the cerebro-spinal fluid for a few minutes after injection, but only for a few minutes, and we have never found it possible after about five minutes to increase the height of the anæsthesia even by very considerable elevation of the pelvis—that is to say, I think that the stovaine becomes fixed in from three to five minutes. It follows from this that the patient's head and the cervical region of the cord must be kept raised during injection and for the first few minutes afterwards.

In the early days of the use of spinal anæsthesia we were very careful to keep the head and shoulders of the patient raised not only during the injection but throughout the operation, and even in bed afterwards. This posture increased that tendency to syncope which is not at all uncommon. Latterly, after a few minutes, the patients have been allowed to lie quite flat, and we have found that this fall of blood pressure has been much less common and there have been no cases in which the stovaine has risen to a dangerous level.

Similarly, in regard to the use of the Trendelenburg position, it does not appear to be material whether the light or heavy solution is used. Generally I have employed the heavy solution, as I found that the analgesia lasted longer with a smaller dose of stovaine.

Combination with Other Methods of Anæsthesia.

When spinal anæsthesia was first employed the great merit claimed for it was that it did away with the necessity for general anæsthesia. But I think as time has passed and experience been gained that opinion has been very much modified, so much so that I think that all who have had any experience with this form of anæsthesia are agreed that the one great disadvantage of stovaine—the conscious patient, the patient present at his own operation—outweighed many of the advantages of spinal anæsthesia, and nowadays it is rarely employed without either some modification of "twilight sleep" or a little general anæsthetic. There is no doubt that a long operation in the Trendelenburg position or an operation on the rectum, such as a combined abdominal perineal or a Kraske's excision, are ordeals which few patients can face, even if it were to their advantage to do so.

Speaking generally, for severe operations the method which has been employed has been to produce anæsthesia with ether, then to inject the stovaine, discontinue the ether for a time, and then just to give a whiff to keep the patient unconscious.

For operations of a less severe type, such as hernia or appendicectomy, scopolamine and morphine are administered in the ward approximately an hour before the operation. The spinal injection is then given in the anæsthetic room before the patient reaches the operating table.

In this connexion I should like to mention a method for increasing the effect of scopolamine and morphine which was

¹ A paper read before the Section of Anæsthetics of the Royal Society of Medicine.

shown to me recently by Mr. P. P. Cole, and which I have used since with very great success. After the administration of the scopolamine and morphine the patient's ears are plugged with cotton-wool and the eyes covered with a bandage so as more or less to shut out the stimuli of light and sound. The increased effect of the scopolamine and morphine is most surprising, and many patients who have been treated in this way, although they have been lifted from the bed and carried upstairs, given an injection of stovaine and then been operated upon, have never known that they have left their room.

The Question of Safety.

It is important to gain some idea of the safety of spinal as compared with other methods of producing anaesthesia, as many of the indications for its use are relative and not absolute. Speaking from my own personal experience of about 8000 cases I have had two deaths.

One was a case of obstruction of the small intestine. The patient was very collapsed, there was profuse vomiting, and after the injection a flood of stercoraceous material from the mouth. The patient was apparently asphyxiated. The respiratory passages were found to be full of vomited matter at the post-mortem.

The second case was a child of 4 years, more or less moribund, suffering from a gangrenous intussusception. Death occurred during the operation from circulatory failure and not apparently from any interference with the respiration, which continued for a short time after any sign of cardiac activity could be observed. Apparently the fall of blood pressure caused by the stovaine, added to the shock already present, was sufficient to cause death.

I think that in the light of further experiences these were both instances of a mistaken choice of anaesthetic.

The above records include patients of all ages, from a few hours up to 80 years. The results obtained with young children were very satisfactory. Once the injection was given they generally passed into a somnolent condition and appeared to be in no way disturbed by the subsequent proceedings. The youngest infants were new-born babies suffering from imperforate anus and hernia into the umbilical cord. It is interesting to note that a relatively larger dose of stovaine is required to produce satisfactory anaesthesia in infants than in adults. A dose of 2.5 cg. of stovaine is required for the smallest babies and more for children of one or two years. Advanced age does not appear to be a contra-indication, and many of the patients included in this series were between 70 and 80 years. Elderly people are perhaps a little more liable to syncope if the anaesthesia reaches a high level.

Complications.

The complications met with during the course of the anaesthesia have been: (1) Interference with the respiration, owing to the stovaine reaching too high a level; (2) complications due to fall of general blood pressure, syncope, &c.; (3) vomiting.

Difficulties due to the stovaine reaching too high a level have been very rare, generally occurring in children where the margin of safety is so much less, or the patients have been fixed in some form of splint, or were in such pain that it was difficult to get a proper position of the spine before injection. Usually this complication was quickly relieved by a little oxygen. Two cases did definitely and progressively stop breathing as the stovaine ascended. One most instructive incident occurred.

The patient was a poor frail little boy who looked as if all his vitality had been sapped by the long strain of a suppurating tubercular hip. In spite of his condition amputation through the hip-joint was decided upon. Great difficulty was experienced in getting the child into a proper position for the injection. The stovaine undoubtedly reached too high a level. The immediate relief of pain following the injection was most striking.

Shortly after the commencement of the operation the intercostal muscles became paralysed. Then very shortly afterwards the diaphragm also—the child became intensely pale, lost consciousness and ceased to breathe. Very gentle artificial respiration by pressure with the hand on the front of the chest was performed, oxygen administered, and the operation hurriedly completed. These efforts at resuscitation had been continued for about five minutes when suddenly there was a slight movement of some of the muscles attached to the lower jaw, followed immediately by efforts at respiration, first by the diaphragm, next by the intercostals. Then, with startling rapidity, the child completely recovered. Before the last stitch had been put in the little patient volunteered the statement that he had been to sleep. No shock followed the operation and the child made an uninterrupted recovery.

The majority of difficulties met with were due to a fall of blood pressure, which varied from a slight pallor to a severe syncopal attack, with loss of consciousness and disappearance of the radial pulse. This complication was much more common in the earlier cases, before we realised that it was

not necessary to keep the head and shoulders raised continuously. Only three cases stopped breathing from syncope. The sequence of events was the same in each case—sudden pallor, loss of consciousness, a few gasping breaths, then cessation of respiration. These cases also occurred in the earlier days, when the patients were propped up. As we did not like to lower the head in order to treat this condition we raised the legs and pressed upon the abdomen. Recovery in each case was as sudden as the onset—one patient again remarking that he had been to sleep. A certain amount of pallor and fall of the general blood pressure occurred in about 30 per cent. of the earlier cases, but since the adoption of the recumbent position it has been much less frequent.

Vomiting occurring during the operation seems to be more or less dependent upon the height of the anaesthesia; if the anaesthesia involved the dorsal cord it was not uncommon, but very rare if the stovaine affected the lumbar and sacral plexuses only.

Without entering into the vexed question of the cause of the vomiting, whether it is subsequent to a fall of blood pressure and more or less mechanical in origin, or is due to direct absorption of the drug, I think experience has shown that measures directed towards raising the general blood pressure, such as slight Trendelenburg position, elevation of the legs, and pressure upon the abdomen, much relieve this symptom.

Sequelæ.

Another question of perhaps hardly less importance than that of immediate safety is whether spinal anaesthesia is more prone to be followed by serious and unpleasant sequelæ than other forms. This, of course, could only be answered by time. I think that the length of our experience now justifies the expression of certain impressions and some definite statements being made upon this point.

Headache, vomiting, and pulmonary complications have occasionally followed the administration of stovaine. Headache was not very common and then slight, but sometimes undoubtedly it was severe. My impression is that the headache was more common when the patients were conscious during the operation—that is, before a general anaesthetic or scopolamine and morphia were used in combination with the stovaine. It also seems that if the patients were handled very gently after the operation, and not jolted or shaken on the way back to bed, and kept quiet afterwards and not allowed to talk, they were less liable to this symptom. One or two cases of severe headache were almost instantly relieved by lumbar puncture and the withdrawal of about 20 c.cm. of cerebro-spinal fluid, although this fluid did not appear to be under any abnormal tension. Post-anaesthetic vomiting following stovaine was very rare and not prolonged in the few cases which did occur.

I think that there is evidence to show that spinal is much less frequently followed by pulmonary complications than any other method of anaesthesia. I have seen bronchitis and pneumonia both follow its use, as I have also seen these two complications follow after the use of local anaesthesia, and we must not forget that these are occasional complications in case of accidents, such as fractures, where no anaesthetic at all has ever been administered. It seems to me that respiratory complications under stovaine depended more upon the pathological conditions present, the condition of the patient, and the type of operation performed.

Acute septic conditions, as appendicitis and osteomyelitis, were generally present in those cases in which pneumonia followed the use of stovaine. Occasionally there were pulmonary complications after operations upon the upper abdomen which, I presume, were due to a reflex rigidity of the chest and insufficient expansion of the lungs, consequent upon the position of the abdominal incision.

Statistics Showing Absence of Permanent After-effects.

One of the difficulties which the pioneers of stovaine anaesthesia had to contend with was the suggestion that permanent muscular paralysis might follow its use, and from time to time cases in which there was some form of muscular paresis, loss of sphincter control, permanent anaesthesia, and even complete paraplegia have been reported.

I have been able to collect in all about 10,000 cases, of which I have actual personal knowledge. These include 400 cases which were done by the late Mr. A. E. Barker, which have not been published, but the records of which he gave to me, about 1500 or 1600 cases done at hospitals by the

resident officers, and about 8000 done by myself. In not one of these cases has there been any permanent paralysis of muscles or abolition of sensation, or any trophic lesions, with the exception of three cases of paralysis of the external rectus muscle of the eyeball, producing diplopia, which lasted about three weeks. Many of these cases were done by people with no special skill, but the same technique was more or less followed in all cases, so that I cannot help feeling that those cases of permanent after-effects which are reported occasionally may be due to some error of technique.

As far as I can gather, these permanent palsies have been more frequent when the puncture has been made very low down—viz., between the third and fourth lumbar vertebrae. Personally, I have generally made the injection between the eleventh and twelfth dorsal. It is generally easier, and if directly the needle has passed through the supraspinous and interspinous ligaments the stylet is removed and it is pushed gently, it is difficult to see how the cord can be damaged, as directly the meninges are entered cerebro-spinal fluid appears, and, moreover, the peculiar sensation imparted to the fingers as the meninges are punctured is quite characteristic, much resembling the puncture of tense tissue paper.

Indications for Spinal Anæsthesia.

It appears to me that the value of spinal anæsthesia is not, as I have previously remarked, that it abolishes the general anæsthetic. There are a few cases in which spinal anæsthesia presents great advantages over any form of general anæsthetic, such as in amputation or diabetic gangrene and for operations of emergency which cannot be done under local anæsthesia in patients suffering from acute respiratory diseases.

I have found spinal anæsthesia of special value for patients suffering from acute or chronic septic conditions with considerable toxæmia, such as acute appendicitis or osteomyelitis. Operations upon these cases are notoriously liable to be followed by disturbances of metabolism leading to a general acid intoxication and also to pulmonary complications.

I think that the general opinion of those who have used spinal anæsthesia to any extent is that the results are on the whole, better if general anæsthesia is not employed. Of course, as acidosis is already present in many of these patients before operation, and as the symptoms of acid intoxication following chloroform or ether (only very rarely after the latter) are much the same as those produced by septic absorption, it is only possible to express a general impression of the value of stovaine in these conditions after the experience of a considerable series. I think this is one of the points upon which we should much appreciate the opinion of our surgical friends.

But, undoubtedly, the great value of spinal anæsthesia is that it either abolishes or very much reduces the amount of shock associated with long surgical operations. This method of anæsthesia has been used nowadays extensively for many operations which are notoriously associated with shock, such as Wertheim's operation and various procedures for the removal of the rectum, and I think there is a general consensus of opinion that the results in these cases have been much improved.

Similarly, I think that the more severe operations in young children, such as excisions and amputations, especially at the hip-joint, are much less formidable under spinal anæsthesia.

Lastly, stovaine produces absolute muscular relaxation. This, of course, much facilitates the performance of many operations and renders long-continued and forcible retraction unnecessary. I do not think that it is overstating the case to say that there are some operations, such as the radical cure of a large and irreducible hernia in a fat and muscular subject, which would be hardly possible without its use. The slightest muscular rigidity makes the operation of prostatectomy very difficult. The complete muscular relaxation of spinal anæsthesia renders such great assistance that this operation is not often undertaken nowadays without its aid. Further, the amount of general anæsthetic necessary to produce muscular relaxation is very different to the amount necessary to produce loss of consciousness, so that by means of stovaine it is possible with a minimum of general anæsthetic to produce narcosis and complete muscular relaxation.

Contra-indications.

Perhaps almost more important than the indications for the use of spinal anæsthesia are the contra-indications against its use. I think these may be very shortly summed up if we say that spinal anæsthesia should never be administered to patients who are likely, from their condition, to be seriously affected by the fall of blood pressure, which is so often associated with the use of stovaine.

I believe that the experience of most operators in the military hospitals in France has been in accord with our experience in the civil hospitals at home, that spinal anæsthesia is absolutely dangerous for patients suffering from profound shock, and I believe that in most cases after a short trial it was given up. Of course, in the base hospitals there has been more scope for its use, as the conditions more or less approximate those of civil hospitals, and severe operations are undertaken upon patients who are in comparatively good condition at the time. Therefore, it seems to me that it should be clearly emphasised that spinal anæsthesia protects patients from the onset of shock due to severe and prolonged surgical procedures, but should never be administered to patients who are suffering from shock at the time.

I think that the impression that spinal anæsthesia is a substitute, when the patient is supposed to be too bad to stand a general anæsthetic, has been responsible for many of the reported fatalities. It is difficult to generalise as to the position of spinal anæsthesia in heart disease; in mitral disease with much pulmonary congestion it is sometimes very useful, but certainly never in aortic disease, nor in any other cardiac or vascular condition in which the patients are prone to syncope.

A problem which has often to be decided is whether the dangers associated with an immediate fall of blood pressure outweigh the benefit to be obtained from stovaine. This is especially the case in acute abdominal surgery. Here the advantages of stovaine are well known—the muscular relaxation, the ease with which the whole abdomen can be explored and the consequent shortening of the operation, and the diminution of the shock, which is so often associated with manipulation of the intestines. But if the patient is much shocked and almost in *extremis* from long-continued obstruction, stovaine should be used only with the greatest caution. Each case of intestinal obstruction must be judged upon its own merits; some of the most brilliant results of spinal anæsthesia have been obtained in this field of surgery, but I think that a routine practice of using this method for all cases of intestinal obstruction, irrespective of the condition of the patient, is only courting disaster.

Conclusion.

Finally, I should like to say a word in regard to the use of stovaine in hospitals as one of the routine methods of producing anæsthesia—I mean in those cases in which no definite indication for its use exists, but where anæsthesia merely is required for such operations as appendectomy, hernia, varicose veins, and so on. It is obviously an advantage to gain experience of this method so that when those cases do occur, in which the special indications for its use are apparent, it is not in the nature of an experiment. It has been urged against this view that spinal anæsthesia is not so safe as general anæsthesia, but I do not think that, given the ordinary care and skill, the facts warrant this conclusion. I have never seen a death from spinal anæsthesia administered for any simple operation, and I believe that many lives have been saved by its use, when occasion requires, and if it is one of the methods in daily use it is more likely to be selected and skilfully administered.

So that, I think, we may say that spinal anæsthesia is now long past the experimental stage. It is one of the recognised means of producing anæsthesia. It is not a universal anæsthetic to be applied to all cases. It has its special dangers. It has its special merits, but used in its proper sphere it is a very valuable method of producing surgical anæsthesia.

Clarence Gate Gardens, N.W.

ROYAL FREE HOSPITAL FAIR.—The League of Nations Fair, held on Dec. 3rd and 4th at 16, Carlton House-terrace by permission of Lady Cowdray, resulted in a sum of £2500 for the Royal Free Hospital.

INFANTILE SCURVY:

THE ANTISCORBUTIC FACTOR OF LEMON JUICE IN TREATMENT.

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Lemon juice has long been recognised as a powerful antiscorbutic. It has recently been demonstrated by Harden and Zilva (1918)¹ that, after removal of the free citric and other acids from lemon juice, the residue retains antiscorbutic activity. As far as can be detected by the methods now available for the quantitative estimation of antiscorbutic potency, the main, if not the entire, antiscorbutic potency of the juice is retained by this residue, which is slightly acid to litmus, but can be made neutral if desired without vitiating its potency, and contains about 15 mg. of solids per c.c.m. The method of preparation has been described elsewhere.¹ Experiment on animals has shown that with precautions as to the temperature used this preparation can be concentrated in bulk to any desired volume, or even evaporated down almost to dryness without losing its potency as an antiscorbutic.

Application of Experimental Findings in Treatment.

The application of these experimental findings to the treatment of human beings is of more than academic importance.

The treatment of infantile scurvy, thanks to the clinical and pathological observations of Sir Thomas Barlow and the late Dr. W. B. Cheadle, has long been highly satisfactory in its results, albeit empirical in its origin, but the rapidity of relief and cure has depended upon the quantity of certain foods of recognised antiscorbutic value which could be administered, and this quantity has necessarily been determined chiefly by the toleration of the patient. In the case of infants this imposes considerable limitation, for the articles chiefly used are orange juice, grape juice, and powdered potato beaten up with milk. Digestive disturbance, particularly diarrhoea, is apt to occur unless these are used with caution. The antiscorbutic potency of such foods cannot, therefore, be utilised to its full extent.

It was hoped that this difficulty might be overcome by the above mentioned preparation, on the assumption that the almost complete elimination of the acids from the fruit juice would remove or diminish its irritant property, and that the concentration of bulk would make it possible to give much larger quantities of the antiscorbutic factor than has hitherto been practicable. This preparation was therefore used in the treatment of the following four cases of infantile scurvy.

Notes of Cases.

In the first case to be recorded, a severe one, rapid recovery ensued.

CASE 1.—Male infant aged 7 months. Had been fed on sterilised "humanised" milk from birth until the present time; the juice of one orange was given once a week until the child was 5 months old, but not subsequently. At 4 months he cut two teeth and at 5 months two more, when the gums were first noticed to be swollen; a fortnight later the gums bled easily. At 6½ months he began to scream as if in pain when moved; the pain seemed to be in the legs.

On admission to hospital the upper gums were greatly swollen, dark purple, and fungating, projecting almost between the lips. The edge of the central incisors could just be seen almost buried in the swollen, projecting gums. The legs were motionless, except for movement of ankles and toes; some thickening of lower third of right femur and over corresponding part of left femur. Both legs seemed very painful to touch. There was some recent hæmorrhage into vaccination scars; urine contained red blood cells.

The infant was put upon a diet of undiluted boiled milk, which clinical experience has shown to have no curative effect on scurvy. One ounce of the concentrated preparation equivalent to double the bulk of original lemon juice was given three times a day, i.e., the equivalent of about 4 lemons daily. After 3 doses, about 18 hours after treatment was begun, there was "some improvement; not so distressed when bed is approached and is moving legs a little." After 4 doses, 25 hours after treatment was begun, "obviously better, moving both legs, especially the left, which is less swollen, the fungating upper gums project less and the teeth are less buried than yesterday." The dose was then increased to 1½ oz. of this concentrated preparation for 2 doses and then to ½ oz. of a much more concentrated

preparation = 7 times the bulk of lemon juice, so that the child has the equivalent of 6½ lemons daily. After two doses of the former and one of the latter, 48 hours after treatment was begun, the protrusion of the gums was less, the legs were moved much more freely, and the tenderness was "much diminished"; the child's colour was also improved.

The solution was continued 5½ days altogether; the child took in the first 24 hours the equivalent of 7½ lemons, in the next 24 hours the equivalent of 6½ lemons, in the next = nearly 9 lemons, next = 12 lemons, and next = 8 lemons.

The recovery was very rapid; 72 hours after treatment began all swelling had gone from the thighs, the legs were moved normally, and there was no pain. The gums were much less swollen and the blood had disappeared from the urine. After 5½ days the solution was stopped, the child being well except for slight swelling of the gums (which 2 days later became normal in colour and showed very little swelling).

The child had taken in 5 days the equivalent of the juice of 42½ lemons without the slightest disturbance of digestion.

In stopping the solution, 2 teaspoonfuls of grape juice were given three times daily, and the stools at once became too frequent 5 days. In contrast to the normal 1-3 per diem whilst taking the much more potent antiscorbutic preparation.

Case 2 was one of mild scurvy, with much less severe symptoms than in the preceding case, but the rapidity of the cure was none the less striking.

CASE 2.—Male infant aged 10 months. Was breast-fed two weeks, then on Glaxo for one month, and since then fed only on a mixed food, apparently a preparation of dried milk with malted cereal. For two weeks before admission began to cry as if with pain whenever the legs were touched. On admission he lay with legs flexed at hips and abducted; did not move them and seemed tender over lower ends of thighs, where perhaps slight thickening, but very vague. One tooth just showing, but gums normal.

The child was put on a diet of undiluted boiled milk. One and a half ounces of the concentrated preparation, equivalent to twice the bulk of lemon juice, were given three times daily. The first dose was given at 7 P.M., the second at 2 A.M. on the following day, the third at 10 A.M. Shortly after this the tenderness was found to have disappeared and there was more movement of the legs. Two and a half hours after the fourth dose—i.e., 28½ hours after treatment was begun—there was no tenderness and the child was moving the legs well, though not vigorously. The next day, after six doses, it was noticed that the child "looked much better." The legs were moved well. There was no looseness of the bowels, though the equivalent of 12 lemons was taken in 38 hours.

The solution was continued regularly in doses of 1½ oz. of the double strength until the infant had taken the equivalent of 18 lemons in 72 hours, after which only a few doses at irregular intervals were given, although really unnecessary, as the child was already well.

In the next case also there was rapid recovery.

CASE 3.—Male infant aged 8½ months. Fed on Savory and Moore's food prepared in the usual way with milk and water since 3 weeks old. For the last three weeks has cried when lifted, as if his legs hurt him. When first seen he did not move either leg, and was evidently afraid of being touched. No definite periosteal thickening could be detected. There were three teeth, but the gums were normal.

This case was seen in private consultation. No accurate record of the progress was obtainable, but on 1½ oz. doses of the concentrated preparation, = twice the bulk of lemon juice, there was a very rapid recovery.

Case 4 was one of severe scurvy, with much more subperiosteal hæmorrhage than was present in any of the three previous cases.

CASE 4. Female infant aged 11½ months. After the age of about 3½ months was fed on Savory and Moore's food for nearly 5 months, and then on Allen and Burry's No. 3 food prepared with pasteurised milk 3 parts, barley water 1 part. At about 10 months old some swelling of lower ends of tibiae and then just above wrists was noticed; the child seemed in much pain. At 11 months there was some blood in stools; more recently a large bruise-like mark had appeared over right buttock.

When the child was first seen there was over both femora and tibiae, especially the left, marked thickening with acute tenderness. There was no movement of either leg or thigh, except very slight flexion and extension of ankles. The gums were swollen and purple.

The child was put upon a diet of undiluted boiled milk. The concentrated preparation = twice the bulk of lemon juice was given, and after 2 doses the infant seemed "much brighter and happier." It was continued in doses of 1½ oz. three times daily, and 48 hours later, after 6 doses, the child was seen again. The child's colour was noticeably better; she had also laughed and made baby sounds for the first time that day for many days. There was more movement of ankles and toes, the gums were less swollen and less purple. The thickening over left femur was decidedly less, but that over left tibia was rather increased.

The child was next seen 5 days later, when the right leg was actually being kicked about freely; the left leg showed some motion, but only very little. The thickening over the left tibia and femur was still present, but much less; the gums were now only "purplish."

Eight days later the left leg could be moved and 5 days after this the infant was able to enjoy its bath, moving both legs almost normally, though the swelling in the left did not finally disappear until about 26 days after treatment began.

This last case was one in which there was evident a large amount of subperiosteal hæmorrhage, and, according to the history, this was probably of some weeks' duration, so that recovery of movement and disappearance of swelling was necessarily a slower process than in the other cases where the thickening, and therefore presumably the subperiosteal hæmorrhage, was much less in degree; the

¹ Harden and Zilva (1918), *Biochemical J.*, xii., 259.

improvement, however, as compared with other cases of similar severity treated by the ordinary methods, was undoubtedly unusually rapid.

Value of the Treatment.

The outstanding feature of this treatment was the use for the first time clinically of the antiscorbutic factor separated from the greater part of the inactive components of the foodstuff in which it occurs. Moreover, this antiscorbutic factor was given in concentration at least double—in one case seven times—as strong as that in which it occurs naturally in the foodstuff (lemon) from which it was obtained. The treatment was thus, so to speak, “intensive.”

As was hoped, the result was found to be extremely rapid amelioration of the symptoms. It is very difficult to give any accurate comparison between the results obtained and those which come from the ordinary treatment hitherto adopted, whether with “potato cream” (i.e., powdered cooked potato beaten up with milk) or orange juice or grape juice. No two cases of scurvy can be guaranteed to be of exactly the same severity; moreover, the effectiveness of the ordinary treatment has often been diminished by insufficiency of dose, and unless the maximum quantity which could be tolerated has been given it would be unfair to assume that the maximum effectiveness of such antiscorbutics has been demonstrated. Owing, however, to their tendency to cause looseness of the bowels these foods cannot be increased beyond certain limits, which vary with the particular infant. Even within these limits the results of their administration are so striking and rapid that it might have been thought hardly possible to improve on them; one of us (G. F. S.) has elsewhere mentioned that “under efficient antiscorbutic diet the tenderness and pain on movement is usually appreciably less in 48 hours.” With the use of the concentrated preparation of the antiscorbutic factor the improvement is even more rapid.

Consideration of Results.

In Case 1, which was severe, there was noticeable improvement—viz., diminution of distress and increased movement of legs about 18 hours after treatment was begun. In Case 2, a slight case, there was definite improvement in these respects in about 16 hours, and very marked improvement in 26½ hours. In Case 3, a very severe case, there was “a great change”—viz., diminution of distress within 22 hours.

This increased rapidity of improvement is not due to anything new in the essential element of the treatment, which is the so-called “antiscorbutic factor”; this was the curative principle in the ordinary antiscorbutic diet just as much as in the preparation we have used. The difference is that in the experimental preparation the unessential and irritant part of the foodstuff has been eliminated and the antiscorbutic factor left in an aqueous medium, associated with little extraneous matter, and this even when considerably concentrated seems to have no irritating effect upon the stomach or bowels. In this way it is possible to give quantities of the “antiscorbutic factor”—e.g., the equivalent of the juice of 6–12 lemons daily—which, if given in the ordinary form of potato or fruit juice, would set up very severe gastro-intestinal disturbance. In ultimate completeness of cure this mode of treatment offers no advantage over the ordinary antiscorbutic foods which only more slowly secure an equally satisfactory result, but it is no small matter if we can hasten even by a few hours the relief of the very acute distress caused by infantile scurvy.

The above results bring out another point of theoretical interest—namely, that they confirm the results obtained experimentally in animals. This antiscorbutic preparation was first tested by Harden and Zilva (1918) in the prevention of the disease in guinea-pigs and curatively in a monkey suffering from scurvy. The clinical course of the recovery in the infants described above was almost identical with that observed in the monkey, and there can now be little doubt as to the bearing results obtained in experimental scurvy with monkeys and guinea-pigs have on human scurvy.

MEDICAL APPOINTMENTS IN IRELAND DURING DEMOBILISATION.—The Local Government Board have intimated to the Omagh guardians that they will not sanction a permanent appointment of a doctor to a dispensary district until after demobilisation. As a result the proposal to fill up the Gortin Dispensary has had to be abandoned and the guardians decided to make a temporary selection.

HYSTERICAL VOMITING IN SOLDIERS.

By W. R. REYNELL, M.A., M.D. OXON., M.R.C.P.,

CAPTAIN, R.A.M.C.

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HYSTERICAL vomiting is comparatively common among soldiers. It is surprising how scanty are the references to this symptom in the very large literature on war neuroses. Besides being a most distressing condition in itself, it may lead to a severe degree of neurasthenia, with progressive emaciation and increasing mental distress, the loss of appetite with which it is associated finally leading in severe cases to a condition of anorexia nervosa. In many cases it is the only symptom, but the slighter forms of hysterical vomiting are common among patients suffering from all kinds of war neuroses. In a large number of cases which have come under our care the hysterical nature of the disorder has apparently not been recognised, and the patient has been diagnosed and treated as a sufferer from gastritis. From the only paper I have seen dealing with hysterical vomiting in soldiers, it would appear that the condition is usually very resistant to treatment and that a complete cure can rarely be expected in less than several weeks or months. Such has not been our experience at Seale Hayne Military Hospital. Out of some 600 cases of war neuroses admitted between June and October, 1918, 18 have suffered from hysterical vomiting of from four to twelve months' duration. All of these patients have been cured within three weeks of admission, most of them within ten days, and a few after a single treatment.

Etiology and Pathogenesis.

Hysterical vomiting is the perpetuation by suggestion of a symptom due in the first place to a pathological condition, such as that caused by gassing, dysentery, phthisis, or appendicitis. In a certain number of cases the exciting cause is purely emotional.

1. *Gassing.*—Gassing is the most frequent exciting cause of hysterical vomiting in soldiers. When a man is gassed, saliva is secreted abundantly as a result of a protective reflex, and when swallowed it carries in solution enough of the irritant to set up acute gastritis with frequent vomiting. The existence of acute gastritis in such cases has been proved by post-mortem examination of fatal cases. In the large majority of cases the inflammation of the gastric mucosa and the vomiting subside *pari passu* within a few days and at most within two or three weeks. In the predisposed neuropath or in a soldier, whose suggestibility has become exaggerated as a result of war strain, the vomiting may persist as an hysterical symptom after the organic disturbance which gave rise to it has disappeared, in the same way as aphonia and blepharospasm, which are the other common hysterical sequels of gassing.

2. *Infections and intoxications.*—In a number of cases the onset of the vomiting dates from an attack of dysentery, trench fever, and other infections. Post-mortem examinations have demonstrated the existence of a definite gastritis in bacillary dysentery, and perpetuation of the vomiting occurs in a certain proportion of patients in the same way as in gassing.

Hysterical vomiting following dysentery.—Pte. D., aged 29, a baker's assistant in civil life, had always been delicate and inclined to be nervous and excitable. He enlisted in September, 1914. After being in India for over two years he was transferred to Palestine in April, 1917. He was beginning to feel very run down as a result of malaria and a “touch of the sun,” when in June, 1917, he contracted dysentery. Vomiting occurred from the onset of the dysentery, and persisted to a slight extent after he left hospital. A few weeks later it became worse and he had to be readmitted. On admission to Seale Hayne Hospital in August, 1918, the patient stated that he had vomited after food for the past 14 months with the exception of short periods when the sickness had not been sufficient to incapacitate him and he had rejoined his unit. For the last three and a half months he had vomited three or four times a day. His weight was 8 st. 9 lb. 3½ st. less than on enlistment. Treatment was begun the day after admission to hospital; the vomiting at once became less frequent, and within ten days it had ceased entirely. There has been no relapse in the six weeks which have since elapsed.

Hysterical vomiting following trench fever.—Pte. P., aged 29, accountant, always suffered from “nerves and headache.” He had a nervous breakdown in 1912. He enlisted in July, 1916, and went to France in December, 1917. He was admitted into hospital in January with a severe attack of trench fever, for which he was kept in bed for four months. After he had been ill some weeks he began to suffer from sickness after food; he could retain nothing but small quantities of

peptonised milk. For several weeks he was treated by rectal feeding, but even then he was sick three or four times a day. On admission to Seale Hayne Hospital in July, 1918, he was in an extremely emaciated and depressed condition.

Treatment was begun at once, and a stomach-tube was passed once a day for a week. After the fifth day the patient vomited once a day, and at the end of a fortnight the sickness had ceased completely. There was no relapse, and when the patient was discharged from the Army three months later he was able to go back to his civilian work immediately.

Captain J. W. Moore has recently had under his care a case of hysterical vomiting following an anæsthetic, and he has kindly furnished me with the following notes of the case.

Hysterical vomiting following surgical anæsthesia.—Pte. B., aged 34, manager of a dairy in civil life, has never been robust or able to do hard work. His brother suffers from neurasthenia and has never been able to work. He was called up in March, 1917, and was sent to France the same month. He was classified B2 on account of his general weakness, and only did orderly work. A week after his arrival in France a shell burst near his hut and a piece of metal entered his buttock. He was operated on two days later and a piece of shell was removed. After the operation he vomited constantly for several days, and since then he had been unable to take any solid food without vomiting.

On admission in July, 1918, he was emaciated and weak, and it was with great difficulty that he was persuaded to eat solid food. Repeated explanations of his condition and constant encouragement were successful in stopping the vomiting 10 days after admission. There was no relapse and he was discharged seven weeks later completely cured.

3. *Reflex vomiting.*—Among the causes of reflex vomiting, which may be perpetuated and exaggerated as hysterical vomiting, phthisis and appendicitis are comparatively common.

Hysterical vomiting in phthisis.—Pte. B., aged 40, was admitted for "gastritis" on May 1st, 1918. He had vomited after every meal for more than 12 months. He was emaciated and looked very ill. Examination of his chest showed extensive tuberculous changes, but the condition was now one of smouldering activity with an evening pyrexia of 99° to 99.6° F. The patient was kept in bed until his temperature was normal. His vomiting was treated as if it were hysterical, and within ten days it had ceased completely and no relapse occurred. He rapidly gained in weight and was discharged from the Army in a satisfactory condition, not having vomited for two months.

4. *Emotional vomiting.*—In the genesis of all neuroses emotion is a factor of prime importance, and in a number of cases of hysterical vomiting this was the exciting cause. Thus a soldier was detailed to bury some decomposed German corpses. The work was of such a revolting nature that he was sick, and the vomiting continued for several months until, when the origin and nature of his illness were explained to him, he was able to control the habit.

Symptoms.

In most cases the patient vomits after every meal, but sometimes vomiting only takes place once or twice a day. In slighter cases several days may pass without sickness, and in such patients the vomiting can often be traced to slight emotional upsets, such as fits of temper, a disturbed night with nightmares, bad news, or sudden excitements. One of my patients, who had not vomited for three weeks, was sick twice after being moved from one ward to another, but after this there was no relapse. Sudden active movements, such as running, lifting, or even stooping to lace up boots, may be enough to cause sickness.

The vomiting is often preceded by epigastric pain, which is always relieved when the patient has been sick. Some patients are sick almost immediately after food. Others are only sick after an interval of half an hour or more. One patient of mine never vomited during the day, but was sick every night two or three hours after going to bed, four or five hours after his last meal. Water-brash is a common precursor of the actual vomiting; patients complain of a "rifting up," "repeating," and a feeling that their stomach contents are being "churned up."

A characteristic feature of hysterical vomiting is its independence of diet. Sometimes, however, a patient can take liquids but not solids. In others some particular article of diet, such as meat or potatoes, will always cause vomiting. But in severe cases sickness occurs when anything solid or liquid is swallowed, and I have had several patients who have been fed exclusively by the rectum for weeks without cessation of the vomiting. If the vomit be examined it will be found to consist of undigested or partly digested food, but the quantity is less than the amount of the meal last taken. It is often watery in character and may contain but little solid matter.

Examination of the patient reveals no sign of organic disease; some epigastric tenderness may be present, but this is unusual.

If the vomiting is of long standing, wasting may be considerable, and many of my patients had lost several stones in weight, but the loss of weight is rarely such as would be

compatible with organic disease of the same duration. If a barium meal be given and an X ray examination made, the size, shape, and movements of the stomach are found to be normal, and it is emptied at the normal rate, if vomiting does not take place.

Diagnosis.

The diagnosis is not usually difficult. It depends upon the absence of signs of organic disease, often with a characteristic history of the onset following gassing or emotional stress. Independence of diet is typical of hysterical vomiting, and as a rule the variety of diets that have been tried is in marked contrast with the monotonous regularity of the vomiting. The watery character of the vomit and the absence of pain both point to a functional disorder. In doubtful cases a barium and X-ray examination may be made, but this is rarely necessary.

The following case is instructive, and illustrates how important it is to be on the look-out for a slight organic focus of irritation in cases which do not recover completely under treatment.

Hysterical vomiting associated with reflex vomiting, due to dysenteric appendicitis.—Pte. M., aged 30, contracted dysentery in Egypt in November, 1917. During his illness he vomited ten or twelve times a day. He was transferred to England in March, 1918, still vomiting three or four times a day. On May 13th he was admitted to Seale Hayne in an emaciated condition. He said that he had never vomited less than three times a day during the last eight months. He was very weak and depressed, and had lost 3 st. in weight.

Examination revealed no sign of organic disease, and the condition was diagnosed as hysterical. Treatment was successful in reducing the vomiting to once a day, with occasional days in which the patient was not sick at all, but a complete cure could not be obtained.

Some weeks after admission the patient complained of a slight pain in the right iliac fossa. Examination showed definite though slight tenderness in this region and Bastedo's inflation test was positive. Appendicitis was diagnosed and the patient was transferred for operation. He was not sick after the anæsthetic and has been completely free from vomiting since, a period of six weeks.

It is quite evident that this patient suffered from chronic appendicitis, which, though insufficient to cause definite symptoms until it became acute, was enough to give rise to a habit of vomiting which was very largely hysterical in nature, as it was very greatly improved by psycho-therapy.

Prognosis.

A certain number of cases of hysterical vomiting recover spontaneously without treatment, but in a large proportion the symptom persists indefinitely unless suitable treatment is given. Elaborate dieting, drug-therapy, and especially rectal feeding, do more harm than good by confirming the patient in his belief that there is something serious the matter with his stomach. I know of one case in which a gastro-enterostomy had been done as the patient was supposed to have a duodenal ulcer as a result of gassing, but the natural consequence of performing such an operation on a normal stomach was to aggravate the vomiting and make it less amenable to psycho-therapy.

Treatment.

The method of treatment I have used for nearly all my patients with hysterical vomiting has consisted of psycho-therapy, reinforced by the suggestive effect of the passage of a stomach-tube. The patient is interviewed in a private room the day following his admission to hospital. A full history of the illness is taken and a thorough physical examination is made. In some of the earlier cases an X ray examination was carried out. The patient must be made to feel that his case has been thoroughly investigated and is thoroughly understood.

The origin of the hysterical symptoms is now fully explained to him. He is told that his illness began with a definite inflammation of the stomach, but that the inflammation subsided within a few weeks; at the end of that time the complex act of vomiting, which would be almost impossible to carry out by a normal person, had become very easy for him, so that what he is now suffering from is a habit. His stomach has acquired the bad habit of contracting soon after it has been distended with food, and all that is necessary is to break this habit. It is explained that a stomach-tube will be passed before his meals, and that this will cause retching and a contraction of the stomach, so that the organ will be given the exercise that it has grown used to about meal-times, but that having contracted before meals it will not have the same tendency to do so after meals. The explanation is, of course, not to be regarded as a scientific one, but simply as one which will appeal to the patient's mind. I tell him that it is a method of treatment that I have never known fail, and that it will depend on him how often the tube need be passed, as in many previous cases a single treatment has stopped the vomiting completely. I impress upon the patient particularly the importance of breaking the habit immediately, as much trouble will be saved thereby. In order to make his effort successful at once I

order that his first meal shall be dry, no fluid of any kind being taken for two hours after meals, which should consist at first of toast and butter and an egg. As soon as the patient can retain dry light meals the diet is gradually increased until a full diet can be taken. After that fluids are allowed with meals, beginning with small quantities. The vomiting becomes less frequent at once and usually ceases at the end of a week or ten days; in favourable cases it should stop after the first treatment.

In patients of superior intelligence it has often been possible to effect a rapid cure by pure psycho-therapy without the aid of suggestion. The patient is made to understand his condition exactly, and is told that in men of more than average intelligence success usually follows such an explanation, but that, failing that, a method of treatment is available which never fails, though it is somewhat unpleasant, and will therefore not be used unless it is absolutely necessary.

Note on Hysterical Vomiting of Civil Practice.

There is no doubt that many cases of chronic vomiting met with in civil practice are hysterical in nature, although this is not usually recognised. It is probable, though further research will be necessary to establish the fact, that most, if not all, cases of so called pernicious vomiting of pregnancy are purely hysterical, the accompanying acidosis being the result and not the cause of the vomiting. The following case is one of several seen by Lieut.-Colonel A. F. Hurst.

Hysterical (so-called pernicious) vomiting of pregnancy cured by psycho-therapy.—A patient, 21 years old, in her first pregnancy suffered during the first few weeks from the vomiting which is so common as to be regarded as physiological. Instead of ceasing, however, at the usual time, it continued in an aggravated form, so that by the third month she was quite unable to retain any solid food. When first seen by Lieut.-Colonel Hurst, at the end of the fifth month, she had become extremely emaciated and weak. She vomited fluids as well as solids, and during the last three weeks she had been fed by rectum, but the vomiting returned directly anything was taken by mouth as well as independently of this. Her urine contained diacetic acid and acetone, and a trace of albumin; her breath smelled of acetone. As all drug treatment had failed, the gynaecologist who saw her at the same consultation urged immediate emptying of the uterus. Lieut.-Colonel Hurst asked for 24 hours' delay. He explained to the patient how her symptoms had arisen as a habit, maintained after the normal vomiting during the first weeks of pregnancy had ceased, and how after its long rest her stomach could now deal with ordinary diet in spite of its failure with slops and fluids, which were not the normal food of an adult. She was thoroughly convinced, took a good luncheon, tea, and dinner the same day, and never vomited again. The signs of intoxication, which were simply the result of starvation, rapidly disappeared, and she was delivered of a healthy boy at full term. She had gained so much in strength that she was able to nurse him, and had lived a normal life during the last three months of pregnancy.

It seems probable that many cases of persistent vomiting after operations are purely hysterical, and the well-known efficacy of gastric lavage in such cases may be more the action of suggestion than due to the removal of mucus or other irritant from the stomach. On several occasions patients, who have suffered so severely from vomiting after previous anaesthetics that they have only been persuaded with difficulty to undergo a further operation, have not vomited at all when told convincingly that the anaesthetist, who was going to give them ether on this occasion, had a special method which was certain to prevent vomiting, although it was quite indifferent what special modification he used.

In the same way the vomiting associated with gastritis, gastric ulcer, chlorotic anaemia, and appendicitis may in suggestible individuals continue or recur as the result of auto-suggestion after the original cause has disappeared, as Lieut.-Colonel Hurst has pointed out. In all such cases it can be rapidly cured by pure psycho-therapy.

Dr. Vermeylen, a Belgian physician who has been for the past three years house surgeon at the North Devon Infirmary, Barnstaple, was recently presented with a cheque to defray his expenses of returning to Belgium by the committee of the institution. The gift was accompanied with a resolution expressing appreciation of his services. The medical staff presented Dr. Vermeylen with a case of surgical instruments.

THE LATE DR. J. MICHELL CLARKE.—As a memorial to the late Dr. Michell Clarke it has been decided to enlarge and continually to add to the medical library controlled by the Bristol University and the Bristol Medical-Chirurgical Society. The cost of the scheme is estimated at about £2000. The subscription list will shortly be closed. Mr. Rafter, registrar of Bristol University, is acting as honorary treasurer, and donations should be forwarded to him.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

FRACTURE-DISLOCATION OF ASTRAGALUS, WITH POSTERIOR DISPLACEMENT OF SUPERIOR FRAGMENT.

BY H. C. ORRIN, F.R.C.S. EDIN.

THE following case appears of sufficient interest and rarity to merit record.

Patient, private, aged 46, came under my care in hospital within seven days of his injury in France, and was said to be suffering from a "swollen and contused right ankle." During a bomb raid he was rendered unconscious, but thinks he was struck on the ankle by a flying missile. So severe, however, was the injury sustained that doubts have arisen as to whether he was hit direct on the ankle or, the foot being fixed, his body was laterally forced away from his foot by the bursting of the bomb. Personally I incline to the latter view.

On examination upon arrival here, there was marked swelling and ecchymosis of the right calf, inner side of foot, ankle, and tarsal region. No movement whatever could be elicited at the tibio-astragaloid articulation. Through the



Fracture dislocation of astragalus.

oedematous tissue on the inner side of ankle could be felt a bony mass, situated laterally between posterior aspect of internal malleolus and tendo Achillis. At a later date, when the swelling had subsided, this mass could be defined as hemispherical in shape. Stereoscopic X ray plates were taken, and the injury was found to be one of fracture of the astragalus, with posterior dislocation and displacement of upper half on to superior surface of os calcis.

Operative measures were not undertaken until all swelling and ecchymosis had subsided. I then investigated the condition by making an incision on inner side of ankle, between internal malleolus and tendo Achillis, and through which I removed the fractured and dislocated half of the astragalus. When the bone was fully exposed, its position was still more remarkable, for not only had a fracture-dislocation occurred, but in its displacement backwards the upper half was found rotated on itself, so that its superior articular surface was looking inwards. No tendons or important structures were divided in the operation, and the wound was closed without drainage. Healing was by first intention.

Passive movements and massage were commenced early, and when ten weeks later the patient walked out of hospital his range of movement at the ankle-joint was most remarkable.

A PERMANENT CRITERION FOR THE STANDARD AGGLUTINATION TEST.

BY A. D. GARDNER, D.M. OXON., F.R.C.S.
(From the Department of Pathology, University of Oxford,
Standards Laboratory.)

ONE of the difficulties in obtaining absolutely uniform results with the macroscopic agglutination test (Dreyer's technique) lies in the fact that different observers may adopt different degrees of agglutination as "standard agglutination." In the directions sent out with standard agglutinable cultures this is defined as "marked agglutination, without sedimentation." But a considerable range of size of flocculi is covered by this definition, and it is desirable, if possible, to introduce greater uniformity in this section of the technique. Even a single experienced worker cannot always keep in his mind's eye precisely the degree of flocculation that he is accustomed to take as "standard," though his error from this cause will be small. The divergence of the standards of any two observers, however, may give rise to discrepancies in the calculation of standard agglutinin units amounting to 20 per cent. or more.

A satisfactory way of overcoming this difficulty would be found in the issue from the central laboratory of permanent tubes showing the precise degree of flocculation that is best adopted as standard agglutination for the various types of bacilli.

The writer has found a way of preparing such tubes in the following manner:—

Tubes.—Special agglutination tubes are made double the length of the small agglutination tubes used in Dreyer's method, but of the same calibre.

Gelatin Solution.—A 20 per cent. solution of gelatin in normal salt solution. This is used for diluting the serum. It must be made as clear as water.

Culture.—Standard agglutinable culture of the bacillus to be agglutinated.

A suitable dilution of the specific serum is made with the melted gelatin solution. One c.c.m. of Oxford standard serum mixed with 9 c.c.m. of gelatin solution answers well. Ten drops of this are thoroughly mixed with 15 drops of standard culture in each tube, and the tubes are incubated until the desired degree of agglutination appears. Then the tubes are immediately stood in cold water and one small drop of commercial formalin is added to each. Such tubes as show, on further minute inspection, the precise degree of agglutination desired are sealed off in the blow-pipe flame. The formalin fixes the gelatin, which will not again melt even at boiling temperature.

Thus we have a tube presenting all the appearances of an ordinary agglutination tube with the agglutinated fluid contents, but actually containing a solid and permanent block of fixed gelatin. I have observed no alteration in the appearance of these tubes over a period of six months or more. If desired, a series of such tubes may be made showing every degree of agglutination from total to the finest trace. A series of this kind may be very useful for reference in fine experimental work.

Different emulsions of the same organism may present variations in the quality of agglutination they show. And particularly in the case of *B. paratyphosus A* and *B. typhosus* are found to agglutinate somewhat imperfectly. Standard agglutination tubes ought, theoretically, to be prepared for each species of bacillus, but for practical purposes it is quite sufficient to use one species of a group as type for the whole group—e.g., *B. typhosus* for the "enteric" group of bacilli and *B. dysenteriae* (Shiga) for the dysentery group. "Standard" agglutination of the latter group is finer than that of the former.

Oxford.

A CASE OF TRAUMATIC ANEURYSM OF THE EXTERNAL CAROTID.

BY S. C. DYKE, M.B., B.CH. OXON.,
CAPTAIN, R.A.M.C. (T.O.).

THE following case seems to show several points of surgical interest:—

Private —, age 34, was wounded by a bullet on August 8th. Bullet entered on left side of nose, just below the root, passed through upper part of nasal cavity, across right side of face, and made its exit through the right external auditory meatus.

On August 13th he was admitted to a hospital in England. He then had little pain. Entrance and exit wounds were both clean; there was considerable swelling of right side of face, over parotid region, and apparently limited by the parotid fascia. This swelling showed no signs of inflammation, and was ascribed to extravasated blood. X rays showed some fragments of bullet casing in right parotid region and a fracture of the right ascending ramus of inferior maxilla. There was some paresis over distribution of upper branch of right facial nerve. This had disappeared by August 21st.

On August 22nd patient complained of much pain in right side of face, and on examination it was found that the parotid swelling was now pulsatile. A diagnosis of traumatic aneurysm was made, though whether of internal or external carotid it was impossible to say.

The patient was seen by Major Cecil Bevers, R.A.M.C. (T.F.), who decided, in view of the impossibility of learning by other means, to expose the carotid and determine by occlusion of the vessels whether the external or internal carotid was involved. Further, in view of the manifest difficulties in the way of performing distal ligation on a vessel lying in the midst of a large extravasation of blood deep in the parotid gland, it was decided to try the effect of proximal ligation of the affected vessel.

Operation was performed the following day. The carotid was exposed through usual incision. The operation was rendered difficult by the shortness of patient's neck, the bifurcation of the carotid being right up under the angle of the jaw. It was found that pulsation of the swelling was completely stopped by occlusion of external carotid; this vessel was accordingly ligated immediately above bifurcation. The establishment of a collateral circulation through the branches of the external carotid of the other side, as feared, did not occur. The swelling decreased in size immediately after operation, and 10 days later, except for the fracture of jaw, condition of patient was normal.

The case is of interest as showing the successful result of early proximal ligation in traumatic aneurysm, even of a vessel forming such free anastomoses as the external carotid. The successful result was probably due to the rapid development of the aneurysm, which outran the widening of the anastomosing vessels and gave no time for the formation of a collateral circulation. In an aneurysm of slower growth the result would probably have been different.

Medical Societies.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of some of the papers read at the meetings of the society held on Dec. 16th and 21st:—

P. CARNOT.—The Question of Antiseptics.

1°. Antiseptisme des milieux extérieurs: la dose et la spécificité des antiseptiques, la production des formes de résistances du microbe: sporulation, etc. sont des notions importantes à acquérir. Une même espèce microbienne peut se comporter différemment vis à vis d'un même antiseptique suivant la dose. Lors du passage dans l'économie, il peut y avoir augmentation de résistance aux antiseptiques et accoutumance à cet antiseptique. Avec une dose d'antiseptique inférieure à la dose mortelle, on peut obtenir une action antiseptique seulement. C'est l'action atténuante d'antiseptique. En diminuant les doses l'antiseptique devient accélérant. A dose minuscule l'action se poursuit. La question des relations des propriétés physicochimiques et des propriétés antiseptiques est complexe: les phénomènes de dissociation, d'ionisation, de solubilisation ont un rôle complexe à jouer. L'action du milieu extérieur, électrolyte, protéine, cellules vivantes du milieu, est importante et modifie considérablement l'influence des antiseptiques. 2°. Au début de la guerre, l'aseptisme chirurgical dominait. Puis l'antiseptisme a dominé. Beaucoup de chirurgiens la considéraient comme nulle, la discussion reste ouverte. La stérilisation des plaies semble ne réussir que d'une façon précoce et dans de bonnes conditions: méthode Carrel. Sur les suppurations anciennes aucune substance ne semble avoir l'action. L'action curative se fera d'autant plus sentir que le contact avec le germe sera plus prolongé et plus intime. Action sur la plaie: (1°) Antiseptique à action antibiotique générale sur microbe et cellules. (2°) Action antitoxique peu intense. (3°) Action antiseptique de plus en plus spécifique mais ayant un rôle empêchant indirect sur l'organisme: action exsudative, lymphorée, &c. 3°. *Antiseptisme interne.* Antiseptisme des canaux et des cavités: on cherche à porter directement l'antiseptique faible au contact du germe à combattre. Dans les infections générales, on emploie des substances à action antiseptique indirecte.

A series of papers followed on the action of particular antiseptics:—

PHILARDRAU.—Sodium Fluoride.

A. LATARJET and Mlle. FROMSY.—Antiseptic Action of Ionisation.

E. FOURNEAU and E. DONARD.—Chlorides of Iodine.

W. MESTREZAT and Th. CASALIS.—Monochloride of Iodine.

W. MESTREZAT.—Chlor-alum.

OL. REGAUD.—Artificial Serum under Pressure.

MAURICE CAZIN and Mme. S. KRONGOLD-VINAVER.—
Electivity of Antiseptics for Particular Organisms.

LOUIS BAZY and FAURE-FREMIET.—Wound Zones
Accessible to Antiseptics.

PLULB and FAURE-FREMIET.—Paraffined Dressings.

GATE and DECHOSAL.—Vaccination against Influenzal
Complications.

Résultats fournis par 105 recherches portant sur 82 cas de grippe, dont 37 sévères et compliqués. 1°. Le B. de Pfeiffer s'est montré une seule fois dans les crachats. 2°. Le pneumocoque fréquent dans les crachats a été trouvé 5 fois seulement dans des pus pleuraux au début, de l'épidémie, jamais dans le sang. 3°. Le *Streptococcus hemolyticus* a été vu 18 fois dans les crachats, 12 fois dans des pus pleuraux, 4 fois dans les hémocultures. Très virulent pour l'homme (6 décès sur 12 pleurésies, 3 sur 4 septiciémies). Ce streptocoque a montré peu de virulence pour le lapin. 4°. Des essais peu nombreux de vaccination curative anti-streptococcique ont paru donner des résultats assez nets, quand il s'est agi de gripes compliquées de streptocoques.

MERY and GIRARD.—Action of Antiseptics on Virulent
Germs in the Naso-pharynx.

Chez trois enfants porteurs de pneumocoques, virulents pour la souris, dans le rhino-pharynx, le collargol au 1/100 et l'huile goménolée au 1/10, versés par les narines largement dans le cavum pendant plusieurs jours de suite, n'ont réussi qu'à diminuer le nombre des colonies microbiennes ensemencées avec le mucus sur boîtes de Petri, sans atténuer la virulence des germes, notamment du pneumocoque, qui demeure virulent pour la souris.

POMMAY-MICHAUX, B. MICHAUX and MOUTIER.—A Diplo-
coccus Occurring in the Hæmocultures of Influenzal Cases.

Dans vingt quatre, les hémocultures de grippés ont décelé un diplo-coccus prenant le Gram, poussant lentement en milieux ordinaires, très bien en milieux à l'ascite, qui rappelle les caractères morphologiques du pneumocoque, mais qui n'est pas pathogène pour les animaux usuels de laboratoire (souris, cobaye, et lapin).

BRUNTZ and SPILLMANN.—Trench Feet a Vitamine
Deficiency.

Le manque de vitamines entraîne des troubles scorbutiques ou névritiques. Ces accidents suffisent pour expliquer le mal des tranchées, qui de ce fait peut-être considéré comme une avitaminose.

NORTH OF ENGLAND OBSTETRICAL AND GYNECO-
LOGICAL SOCIETY.—A meeting of this society was held in Liverpool on Dec. 13th, Mr. Miles Philips, of Sheffield, the President, being in the chair.—Mr. W. W. King showed Two Cystic Tumours of the Vulva of somewhat doubtful pathology. The first was probably a cystic adenoma of Bartholin's gland, and the other a cystic endothelioma.—Dr. Blair Bell showed an Abscess in a Fibromyoma undergoing Red Degeneration, and Encephaloid Cancer of Abdominal Wall secondary to paracarcinoma abdominalis for ascites due to intra-abdominal carcinoma.—Dr. J. H. Willett showed a case of Ectopic Gestation in which the mole, about the size of a hen's egg, was lying in the pouch of Douglas, and both Fallopian tubes apparently normal, except that on the right side a salpingotomy had been done some years previously, and this was found to be closed. He also showed a specimen of a Uterus with a large number of fibroids, in which there was an early pregnancy, in which hysterectomy had been necessary on account of severe pain.—Dr. Leith Murray showed a specimen of Sessile Red Fibroid weighing one pound on the anterior wall of the uterus, causing acute symptoms during pregnancy and enucleated at the twenty-first week without interruption of gestation.—Dr. Fletcher Shaw read the notes of a case of Extra-uterine Pregnancy which had progressed to the fifth month, and for which he had had to do an abdominal section on account of severe pain.—Dr. Briggs read a short note on the Radical Cure of Complete Proctentia, illustrating his paper with diagrams and photographs and reading the notes of several illustrative cases.

NATIONAL FOOD REFORM ASSOCIATION.—"Dietaries Suitable for Secondary Schools, Colleges, Hostels, Clubs, &c., with Recipes, Notes, Quantities, and Weekly Expenditure. Approximately, 8s. per head," 1s. 3d. net, is about to be published by the National Food Reform Association, Danes Inn House, 265, Strand, W.C. 2.

LIVINGSTONE COLLEGE, LEYTON.—This college, which normally exists for the training of men who are, or intend to be, foreign missionaries in an elementary knowledge of medicine and surgery, has been used since August, 1915, as a hospital for wounded soldiers. In a little over three years more than 2000 patients have been received from the Bethnal Green Military Hospital to which Livingstone College is an auxiliary. It has now been decided, temporarily, to close the institution, and it is hoped that the ordinary work of the college will be resumed next October. In the meantime the Hospital Council are appealing for funds in order that they may be able to hand over their accounts to the college with no deficit. About £300 is required.

Reviews and Notices of Books.

A *Text-book of Pharmacology and Therapeutics*. By A. R. CUSHNY, M.A., M.D., LL.D., F.R.S. Seventh edition, thoroughly revised. London: J. and A. Churchill. 1918. Pp. 712. 18s. net.

IN revising his text-book for its seventh edition Professor Cushny has not found it necessary to introduce modifications so extensive as those which distinguished the sixth edition from its predecessors. The classification of drugs—adopted in the sixth edition—on the basis of the organs most characteristically affected by them has justified itself, and is retained. Only closer study of the new edition reveals how much has been done, by deft re-statement here and addition there, to ensure that the book keeps pace with the progress of knowledge and continues to justify its reputation as a storehouse of practically all that is of proven significance in pharmacology.

The immediate need for this new edition was created by the issue of the Ninth Revision of the United States Pharmacopœia. The inclusion in this of biological standards for certain remedies necessitated a short chapter on methods of biological assay. This chapter goes hardly at all beyond description of the methods thus rendered official in America; and such a restriction was probably almost inevitable, for the sake of the American student, to whom a discussion of unauthorised methods might have proved confusing. More than one opinion is possible, however, concerning the validity of some of the methods adopted by the U.S.P., and the optimist may look forward to the possibility that before another new edition of the text-book is required a more progressive spirit among those responsible for such matters in this country will have widened the scope of this chapter. Only those who have tried for themselves to cope with it can form any estimate of the vast crop of pharmacological and therapeutic observation to be gathered in the world's medical and scientific literature, or of the extent to which it is scattered through journals devoted to the neighbouring sciences of physiology, chemistry, pathology, and practical medicine. The attempt at gleaming over these immense fields, to say nothing of the threshing and winnowing, means bewilderment for most of us. Professor Cushny's power of surveying a wide range of the literature, not only of avowed pharmacology but of the kindred sciences as well, of seizing instinctively what is new and significant among so much which is neither, and of presenting it in the light of his ripe experience as teacher and investigator, has given to his book the position of unique authority which it has long held among text-books of pharmacology in the English language.

Pharmacology, as an independent science, is a comparative novelty in the medical curricula of this country. The gradual displacement of the medley of *materia medica*, pharmacy, and clinical empiricism, with odds and ends of toxicology, which at one time took its name and its rightful place; the growing recognition of experimental pharmacology as the necessary basis of the scientific therapeutics which all desire—no changes have had more importance than these in the recent developments of medical education and practice. No influence has been stronger in promoting this change, and its logical outcome in the transference of exact methods to the clinical study of therapeutic effects, than that exercised by this text-book and by its distinguished author. It is to be hoped that more and more students will make it their teacher and guide. They may gain from it not merely equipment for examination tests, but a habit of mind which will be a lasting possession, an insight into methods which will enable them in turn to use their opportunities of practice for the advancement of medical science, as well as for the immediate benefit of their patients.

The Practice of Medicine. By SIR FREDERICK TAYLOR, Bart., President of the Royal College of Physicians. Eleventh edition. London: J. and A. Churchill. 1918. Pp. 1091. 24s.

IT is a high and arduous task to supply the needs of the average medical student for a systematic text-book of internal medicine during a period of 23 years, but Sir Frederick Taylor has done it. The first edition of the "Practice of

Medicine" appeared in 1890; the eleventh edition is now before us. During this period most one-man text-books have become systems with a number of contributors, and it is now recognised to be impossible for any one man to cover adequately and equally the whole ground of internal medicine. It may be that no other will attempt it. But in that case the fortunate student of the future will still have one cause of regret, for a one-volume one-author text-book gives a bird's-eye view of a subject which is obtainable in no other way.

Sir Frederick Taylor has added to the present edition short paragraphs on the new diseases, or new aspects of diseases, arising during the war. A certain number of new charts and illustrations also appear; but their selection is arbitrary, and it is doubtful whether 85 blocks are of any real value in illustrating so enormous a field. The lecture diagram, the ward, and the clinical laboratory are the proper illustrations to a book on the practice of medicine.

A few verbal errors have, as is natural, crept into the text, but on the whole the book is a marvel of accuracy.

Orthopædic Treatment of Gunshot Injuries. By LEO MAYER, A.M., M.D., Instructor in Orthopædic Surgery, New York Post-Graduate Medical School and Hospital. Illustrated. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 250. \$2.50.

THIS book is largely the outcome of Dr. Mayer's experience as orthopædic surgeon to the Urban Red Cross Hospital and to the Oscar Helene Home for Crippled Children. But although he follows the methods of German orthopædic surgeons to a considerable extent, he pays a tribute to the work of Sir Robert Jones, and in various parts of the book shows evidence of a wide acquaintance with the work of British surgeons. While illustrations of Professor Sauerbruch's operative technique for utilising the muscles of the stump are given, no mention is made of the further developments in this direction made by Signor Putti.

The book deals with the treatment of war injuries before and after admission to the base hospital. Before admission the essential requirement is the proper fixation of the injured part; in the base hospital the problem is to determine the proper time to discontinue fixation and restore motion. In the first part Dr. Mayer discusses the best methods of fixation of limbs with fractures of the bones or injuries to joints, the diagnosis and immediate treatment of injuries to nerves, and the orthopædic treatment of injuries to muscles, tendons, and cutaneous tissues; in the second part he deals with the subsequent treatment in the base hospital. Dr. Mayer emphasises the fact that gunshot injuries to bones do not heal so rapidly as fractures due to indirect violence; after removal of the immobilising splint he advocates the use of an apparatus to protect the injured bone and to restrain the movement of adjacent joints. Macewen's view that the periosteum acts only as a limiting membrane is not upheld by the author; his experiments support the conclusions of Ollier—viz., that the most important of the osteogenetic cells are those lying between the outer fibrous layer of the periosteum and the surface of the bone, the so-called cambium layer of the periosteum. In bone-grafting Dr. Mayer insists on the importance of postponing the operation till all signs of infection have been absent for four months. He refers to his investigations on the anatomy and physiology of tendons and points out the importance of the "paratenon," a name given to the loose areolar tissue containing an unusually large number of elastic fibres, which separates the tendon from the fascia outside the tendon sheath and extends downward into the sheath in the form of a tongue-like fold, the plica. On contraction of the muscle, the plica allows the tendon to glide freely and at the same time maintains the sheath wall intact. The author does not find that electrical tests assist in deciding as to the necessity of an operation on an injured nerve; he places reliance on alterations in sensory symptoms or in the extent of paralysis and the probability of the nerve being directly injured its anatomical course and the direction of the bullet being taken into consideration. Dr. Mayer insists on the value of workshop therapy and lays especial emphasis on the necessity of the Military Orthopædic Hospital including a workshop for the manufacture of artificial limbs and appliances. This shop allows the hospital to make its own splints; it affords opportunities for workshop therapy; it enables every patient to learn how to

mend his own artificial limb or appliance; it teaches some of the men a well-paid trade.

Although the choice of words and phrases is not always happy, the subject-matter is excellent. The book is extraordinarily well illustrated; the text below the figures affords complete explanations.

Medical Ophthalmology. By ARNOLD KNAPP, M.D. *International System of Ophthalmic Practice*, edited by WALTER L. PYLE, A.M., M.D. London: Heinemann. 1918. Pp. 509. 21s.

THE aim of this book is to give the essentials of what is known of the relations of ophthalmology with every other branch of medicine and surgery. The most prominent place is naturally taken by diseases of the nervous system, since in them the presence or absence of optic neuritis may be essential to the diagnosis. Of almost equal importance is an efficient ophthalmoscopic examination in late syphilis, albuminuria, and diabetes, and in many other conditions, especially circulatory. On all these subjects and on others, including ocular tuberculosis, poisons affecting the sight, and the relations of heredity to eye diseases, the volume before us, although from the nature of the subject it contains but comparatively few pronouncements which can be considered final, will be found useful both by the general practitioner and by the ophthalmic surgeon.

The author's endeavour is to give an impartial expression to varying views rather than to press his own conclusions on the reader. It must be confessed that such a book is lacking in the interest which belongs to one in which first-hand observation predominates, such, for instance, as Gowers's "Medical Ophthalmoscopy." On the other hand, it is more comprehensive and necessarily more up to date, though in this latter respect it will doubtless need revision if it is to become a permanently valuable text-book. The section, for instance, on ocular symptoms of head injuries is principally based on pre-war writings in the Graefe-Saemisch text-book, and ignores many important observations which have already been published by English and French surgeons within the last four years. We may suggest, too, that the addition of illustrations and ophthalmoscopic pictures to the text would greatly add to the quick comprehension of the book. The illustrations already there are entirely confined to the preliminary chapter on the anatomy and physiology of the visual paths and ocular nerves. The subject of treatment is entirely outside the scope of the volume.

Medical and Surgical Reports of the Episcopal Hospital. Vol. IV. Philadelphia: W. J. Dorman. Pp. 326.

TEN short articles in this volume refer to ophthalmic subjects. The most valuable of them is a description of a case of implantation cyst of the anterior chamber by Dr. Goldberg, illustrated by two good drawings. Dr. F. Kraus contributes an article on bilateral choked disc following thyroidectomy of some speculative interest, and another on a method for the ligation of the ophthalmic vein for exophthalmos, with the report of a case. The clinical report of a case of mirror writing, by Dr. S. H. Brown, is also of interest as showing what can be effected by a painstaking teacher in counteracting this rare abnormality.

The Ship Captain's Medical Guide. Edited by CHARLES BURLAND, M.D. BRUX., F.R.G.S., Senior Medical Inspector to the Board of Trade. London and Edinburgh: His Majesty's Stationery Office; Dublin: E. Ponsonby, Ltd. Pp. 172. 2s. net.

THE ideal in which no ship would put to sea without having a competent surgeon on board can never be realised, and the need of such a manual as this will always be necessary. The various accidents and diseases that are likely to occur on board ship are explained as completely as possible, having regard to the fact that the practitioner will be a layman; if the instructions are intelligently carried out, much avoidable sickness and suffering among the crews will be obviated. Scales of medicine and lists of the medicinal stores issued by the Board of Trade are given, as well as invalid diets, while stress is laid on the importance of watchfulness in preventing disease. We note with satisfaction that careful attention has been paid to those diseases which, owing to the exigencies of war, may prove more than ordinarily troublesome—infectious diseases, plague, malarial

fevers, and venereal disease. Regarding this last matter attention is called to the importance of instructing the crew in the dangers of infection and the value of prophylaxis. Together with a knowledge of first-aid (which all candidates for master's and mate's certificates must now possess), the book should prove useful to travellers in places where skilled medical advice is unobtainable. The last edition of the book was published in 1912, a new edition having been called for in consequence of a large number of copies having been destroyed with the ships that contained them.

Transactions of the Sixth International Dental Congress.
Published by the Committee of Organisation, 19, Hanover-square, London, W. Pp. 753.

THE Sixth International Dental Congress was held in London in August, 1914, but owing to the outbreak of war the work of the Congress was considerably curtailed. The transactions of the various meetings have been issued recently and form a useful contribution to the science of dentistry. Although the majority of the papers deal with purely technical subjects there are a few communications of interest to those not engaged in the practice of dentistry. The paper on the Teeth of the Australian and Tasmanian Aborigines, by B. Nicholls, should be of great value to anthropologists, and the paper on the Evolution of the Human Dentition, by J. Humphreys, is a useful résumé of our present knowledge of this subject. In the section on oral surgery there are several papers well worthy of careful perusal; of these, the most interesting are those on Cysts of the Dental System, by L. Widman, of Stockholm; Regeneration of the Mandible after Caries and Necrosis, by H. M. Oryer (America); and Dental Sepsis as a Predisposing Cause of Cancer, by F. St. J. Steadman.

Reports and Analytical Records

FROM

THE LANCET LABORATORY.

ITALIAN ICHTHYOL—SYN. AMMONIUM SULPHO- ICHTHYOLATE.

(SOCIETÀ INDUSTRIE CHIMICHE, NAPLES. AGENCY: PAUL BEHREND, 4, ADRIA ROAD, DIDSBURY, MANCHESTER.)

THE discovery of ichthyolitic shales in the mountainous regions of Giffoni Vallepiiana, Salerno, has opened up a supply of Italian ichthyol which, according to our examination, is not in any degree inferior to that produced in the Tyrol (Seefeld). The therapeutic importance of ichthyol probably depends upon the presence of "sulphidic" sulphur associated with an organic group. Sulphuretted hydrogen itself has marked bactericidal properties. The sulphur in this Italian ichthyol, according to our analysis, is distributed as follows: As sulphionate, 1.9 per cent.; as sulphate, 2.0 per cent.; and as sulphidic sulphur, 4.5 per cent.; giving a total amount of 8.4 per cent. of the element. It is easily soluble in water, yielding a dark brown, practically clear fluid without deposit. The sulphur compound is possibly present in the colloidal form, which adds to its activity as a therapeutic agent, to quote some cases of its application in gynaecological, urological, and dermatological practice. The ammonia set free by magnesia amounted to 4.60 per cent., and the loss on prolonged heating at 100°C. was 56.60 per cent.; this includes a small proportion of volatile matter, the bulk of this loss being due to moisture. The manufacture of ichthyol consists in the distillation of the shale and the subsequent sulphonation of the resulting oil.

INFLUENZA VACCINE (MIXED).

(BURROUGHS, WELLOOME, AND CO., SNOW HILL BUILDINGS, E.C.)

This mixed vaccine is based on the directions which resulted from the Conference on Preventive Vaccination for Influenza held at the War Office on Oct. 14th, 1918.¹ Each cubic centimetre contains 60 millions *B. influenzae*, 200 millions pneumococci, and 80 millions streptococci, and includes, it is stated, more than 20 strains isolated from cases occurring during the present epidemic. The "first dose" is represented in 0.5 c.cm. and the "second dose" in

1 c.cm., as laid down by the Conference. The vaccine is contained in 1 c.cm. phials and 25 c.cm. rubber-capped bottles.

ETHYL CHLORIDE FILMS.

(HEDLEY AND CO. (LEYTONSTONE), LTD., 120, HARROW-ROAD, LEYTONSTONE, LONDON, E. 11.)

The ready solubility of so many useful medicaments in the easily volatile ethyl chloride has suggested an interesting method of employing these drugs for local application. The following are examples of ethyl chloride solutions which we have examined, but the list is an extensive one: Iodine (3 per cent.) menthol, salicylic acid, resorcin, phenetol et satrol, and iod. form. The liquid sprayed on the skin rapidly evaporates and leaves a perfectly uniform film of the active constituent which, unlike a loose powder, adheres firmly. The useful applications of this method will readily occur, but mention may be made of such examples as the employment of antiseptics, vesicants, or soothing agents to the skin, local analgesics (menthol), parasiticides, and plastic protectives. The merits of this ingenious and effective method may well claim attention.

GENASPRIN.

(GENATOSAN, LTD., 12, CHELSEA STREET, LONDON, W.C. 1.)

The purity of acetyl-salicylic acid is of importance if its dissolution is required to be deferred until the drug reaches the alkaline intestinal juice. We found neither free salicylic nor acetic acid in this preparation. The tablet disintegrates satisfactorily in water, and gives absolutely no violet colouration with ferric chloride. On adding 0.2 per cent. hydrochloric acid, representing the acidity of the gastric juice, there is still no response to the iron test, slight hydrolysis only taking place after several hours. The claim is substantiated that this preparation is a particularly pure specimen of acetyl-salicylic acid.

"COFECTANT" LOZENGES.

(EDWARD COOK AND CO., LTD., BOW, LONDON, E.)

The germicidal efficiency of "cofectant" a non-toxic coal-tar derived phenoloid, was definitely established in our inquiry on disinfectants some years ago. It is well adapted to form the antiseptic basis of a lozenge coupled with some eucalyptus and peppermint. The lozenges are well designed and are free from any harsh effect in the mouth, where, in fact, they are agreeably demulcent. Apart from their value in keeping the mouth clean in a real aseptic sense, and relieving irritable conditions of the throat, they serve also as an antifermentative, and they therefore prove useful in certain dyspeptic conditions.

(1) FEROXAL; AND (2) VERONIDIA.

(MODE-N PHARMACEUTICALS, 48, MORTIMER-STREET, CAVENTISH-SQUARE, LONDON, W. 1.)

(1) We are not aware that protoxalate of iron has been prescribed in this country to any extent, though Mr. W. Martindale mentions it as being included in Spanish and Hungarian pharmacopœias and as having been given in anaemia and as a nerve tonic. Combined with the alkaline phosphate of sodium under the name of "feroxal" it is reported, chiefly in French clinics and recently, to be of peculiar value in the anaemia and chlorosis of pregnancy and in debilitated conditions generally. We found the composition of "feroxal" to be as stated. The dose is small, as otherwise the toxicity of the oxalic group might give rise to apprehension, although the acid is present in many foods, notably cocoa, tea, spinach, and rhubarb. (2) Veronidia provides an agreeable way of administering a well-known hypnotic, under, of course, the direction of the physician. It is a syrupy preparation containing aromatic, glycerine and spirit as solvents, preservatives, and flavouring agents.

BRIGHTON HOSPITAL SUNDAY FUND.—The allocation of the sum collected in the churches and chapels of Brighton, Hove, and Preston, on Hospital Sunday (Oct. 27th) has just been made. The total sum collected was £1220 12s. 1d., and the highest grants made have been as follows:—Royal Sussex County Hospital, £528; Royal Alexandra Hospital for Sick Children, £135; Brighton, Hove, and Preston Dispensary, £132; Queen's Nurses, £102 10s.; Hospital for Women, £98. Two circumstances told against the previous year's total of £1527 15s. 3d. being reached—the wet Sunday, and the fact that the day before was one of many "flag" days.

¹ THE LANCET, Oct. 26th, 1918, p. 562.

THE LANCET.

LONDON: SATURDAY, JANUARY 4, 1919.

A New Year's Wish.

THE New Year opens with so much immediately ahead of the medical profession that no one can say what matters call most urgently for attention, or what particular developments will be the first to receive the public interest without which progress can be but hardly made. We have a new world and a new sort of Parliament to direct our energies for national and for international good, and in this challenging environment medicine takes a stand, ready to alter in the cause of truth, while strong to maintain the proven essentials of science. And this much is certain, the public will expect from medicine an amount of prevision and guidance which has never before been sought from us. That the good health of the people is the people's greatest asset is now universally admitted, from which it follows that legislation with such an objective will be warmly welcomed, and from which it *should* follow that medical advice will be sought and acted upon by Parliament to an increasing degree. Our professional voice in the new Parliament cannot be a loud one—this will be apparent from the result of the polls in which medical men were concerned, and which we publish elsewhere; but if what the medical Members say within the Senate is found to reflect a solid consensus of scientific opinion without benefit to the nation of supreme value should follow. May the New Year bring, out of the many schemes to the same end, a real union of medical men, in which our national services may be properly recognised and fully utilised.

Lessons of a Great Epidemic: the Pathology of Influenza.

THE second wave of a great and—let us be frank about it—unexpected epidemic has passed over our heads and left us breathless, indeed, but seized of a firm resolution to get even with the greatest plague of modern times. On the clinical aspect of influenza fresh light is thrown by the important work done at Aldershot which we print at the front of this issue of THE LANCET. On this, as well as on the epidemiological aspect of influenza, we reserve comment until next week. For while the morbid chain may be broken at any of its links—epidemiological, etiological, pathological, or clinical—it is, at the moment, to pathology that the thoughts of many have turned with the greatest prospect of result. To the October number of the *Medical Supplement* there was contributed an admirable review of the etiology and pathology of influenza. We can recall no more masterly review in our language of this or, indeed, any other "war disease" during the last four years, so that discussing the more recent developments it is fitting

to take it as a basis. As a result of his study of the literature, European and American, the author (Dr. RAJKMANN) concludes: "The cold logic of the post-mortem room in the dispassionate home surroundings does not leave, however, any doubt that *B. Pfeiffer* when present did not play any more important part than the ubiquitous diplo-streptococcus. The real virus, classified *faute de mieux* as 'invisible,' or a 'filter-passer,' so as to cloak our ignorance of its nature, remains to be discovered." How far are these conclusions borne out by the later studies? As indicated by more than one of the articles which appear in this and last week's issues of THE LANCET, the diplo-streptococcus is still with us. But two, at first sight directly contradictory, series of observations deserve note. On the one hand, whereas the earlier literature of this epidemic laid stress upon the infrequency, or at least inconstancy, of the discovery of the influenza bacillus in the sputum, its rare recovery from the lungs in cases of influenzal pneumonia, its still rarer recovery from the blood, and this on the part of trained bacteriologists of the first class, to-day with a striking unanimity those who have succeeded in preparing sterile trypsinised blood media along the lines laid down by MATTHEWS,¹ or who, following LEVINTHAL,² have employed heated blood media, announce that Pfeiffer's bacillus is obtainable in abundance from the sputum of practically every case of the disease. On the other hand, we have the series of observations which from various sources, confirming one another, appear to establish a "filter-passer" as the primary agent and essential cause. This series was begun by SELTER,³ who sprayed his own throat and that of his assistant with a saline filtrate of throat swabbings and throat washings of several patients. Each developed a typical though mild attack of influenza. Next, NICOLLE and LEBAILLY,⁴ in Algeria, making a similar saline filtrate through a Chamberland (porcelain) L. bougie, conveyed the disease to monkeys by intranasal and conjunctival introduction of the filtrate, intravenous injection producing no results. Subcutaneous injection of the filtrate into two volunteer subjects induced the typical disease. At the meeting of the Académie des Sciences a week later, DUJARRIC DE LA RIVIÈRE⁵ reported that the filtered mixed defibrinated blood of four patients inoculated subcutaneously induced in himself a well-marked attack of the disease. More recently GIBSON, BOWMAN, and CONNOR,⁶ working under the Adviser in Pathology of the British Forces in France, Colonel CUMMINS, A.M.S., at an Army laboratory in France, with the aid of the Medical Research Committee, confirmed the observations of NICOLLE and LEBAILLY as regards the effects of intranasal and conjunctival injections upon monkeys, and call special attention to the development of pulmonary hæmorrhages and hæmorrhagic

¹ THE LANCET, 1918, II., 104.

² Ztschr. f. Hygiene, 1918, lxxxvi., 1; and Berl. klin. Wochenschr., 1918, IV., 712.

³ Deutsche med. Wchnschr., 1918, xlv., 932. It deserves note that in 1917 Major G. B. Foster, junior, of the U.S. Army, had brought forward evidence that a "filter-passer" is the active agent in the production and spread of common "colds" (Jl. of Infectious Diseases, 1917, xxi., 461).

⁴ Ctes. Rend. Acad. des Sciences, Oct. 14th, 1918, 617, and Presse Méd., Oct. 17th, 1918.

⁵ Ibid., Oct. 21st, 1918.

⁶ Brit. Med. Jour., 1918, II., 645.

exudates into the alveoli of the inoculated animals. The affected animals afforded no cultures of the influenza bacillus.

How are these apparently opposing sets of facts to be harmonised? To this all pathologists who have studied the lesions of fatal cases are agreed—namely, that, in Dr. RAJKMANN'S words, "The essence of the whole pathological picture consists in the abundance of hæmorrhages seen in the mucous and serous membranes and in the lungs. The whole process seems to be primarily a bacteriæmia localised in particular in the pulmonary blood-vessels. Hæmorrhages in the lungs pave the way for secondary infections." Now characteristically the influenza bacillus is absent from the blood in the early stages of the disease. It cannot, therefore, be the cause of the outstanding vascular lesions. Accepting the influenza bacillus as constantly associated with the disease—at least in this later phase of the epidemic—we are met thus with the alternative, either that we deal with one organism which presents itself in two phases, a minute filterable form which becomes hæmal and a bacillary form mainly developed in the air-passages, or we deal with a symbiosis, and are to regard the filterable form as gaining entrance through the air passages, and by its presence favouring the coincident growth of Pfeiffer's bacillus, and this in such a way that the two viruses are conveyed together from individual to individual. Such symbiotic growth of the filterable virus and the diplo-streptococcus was first suggested by SELTER, and, remembering the so frequently recorded presence of a "diplo-streptococcus" there presents itself a third possibility—namely, that minute forms of this small organism constitute the filter-passers, and that we deal pre-eminently with a symbiosis of a two-phased streptococcus and the influenza bacillus. In favour of this view is the fact that streptococci as a group are hæmal organisms, with a tendency to multiply and form bacterial emboli in capillaries, and that LITTLE, employing the diplo-streptococcus isolated by him from a large proportion of fatal cases⁷ (a form identical with or closely allied to the *Diplococcus epidemicus*, which BERNHARDT⁸ regards as the essential cause of the disease), has been able to set up in rabbits a fatal condition in which early pulmonary hæmorrhagic lesions are the characteristic feature.

It is along these lines, it would seem, that the problem is to be solved. Will the "filter-passers" remain invisible, or, when grown under suitable conditions, will it develop into a visible streptococcal or a bacillary form? If it will not, then the symbiotic theory will have to be accepted, or the closely allied view, which has gained much support from French workers, of composite and successive infection. Here one organism, the filter-passers, preparing the ground for another, the influenza bacillus, which for a time flourishes and has the upper hand, and in its turn prepares the way for, and is replaced by, a member of the streptococcus group, or by the

pneumococcus, just as in the maturation of a dung-heap we find a succession of forms replacing each other until the cellulose of the straw and the proteids of the excreta are broken down stage by stage into their elementary constituents. Of these two views the symbiosis hypothesis, with coincident conveyance from throat to throat of two or more species of micro-organisms, appeals to us, we confess, as meeting more closely the observed facts of the epidemic.

A Fellowship of Medicine.

AT the beginning of last month Sir ARBUTHNOT LANE presided over a meeting held at the house of the Royal Society of Medicine to consider the desirability of forming an association for coöperation in medicine among the English-speaking countries. It was understood that the national limitations thus indicated would not be insisted upon, though for the time being the promotion of mutual understanding between the medical profession in the United States and the British Empire was the main objective of the movement. The meeting at the Royal Society of Medicine grew out of an earlier and informal gathering held at the invitation of Lord EUSTACE PERCY, at which it was urged that the opportunity presented by the coming together of medical men from America and all parts of the British Dominions should be utilised to organise some permanent form of organisation. At that meeting the obvious arguments for the advancement of some plan mutually beneficial to the medical profession of both nations were ably stated by the host and convener, and by others present, and as a result Sir STCLAIR THOMSON and Mr. J. Y. W. MACALISTER were asked to act as honorary secretaries and requested to formulate a scheme. These two well-chosen representatives of science and organisation having consented to do their best, at the meeting at the house of the Royal Society of Medicine a short report was submitted by them on Dec. 4th, and from this report it appears that the Royal Society of Medicine has generously agreed to let the new organisation have office room in the house of the Society, so that 1, Wimpole-street, may now be regarded as the official headquarters of the movement.

The Royal Society of Medicine has now issued a cordial invitation to the medical men of the Dominions and America, as well as to the medical men of all the Allies, to use the buildings of the Society as the home of a Fellowship of Medicine, which henceforth has a local habitation with a tentative name—"The Inter-Allied Fellowship of Medicine." Further support of the movement has been reported on the part of the Director-General of the Army Medical Service, Surgeon-General GOODWIN, who has arranged that in all the commands the medical officers from overseas should be cordially invited to attend clinics, lectures, and demonstrations, and be given every facility for imparting as well as obtaining information. As regards London, the principal hospitals have been invited to extend the teaching of their institutions to overseas medical officers, and a general invitation has been accordingly given to our medical colleagues to come to the hospitals at stated hours and to attend lectures or operations. We wish we could add that the London hospitals

⁷ See Little, Garofalo, and Williams, THE LANCET, 1918, II., 34; and Little, 1918, II., 707.

⁸ Med. Klin., 1918, xiv., 683.

were with one accord ready to welcome American medical men, medical men from the Dominions, and representatives of our science from among all our Allies to a properly arranged course of post-graduate instruction. As yet no such organisation exists, and the pity of this is now terribly apparent. Here, in London, we have unexampled opportunities. Our pathological material is unrivalled. The local centre of the medicine of six millions of people, London is the metropolis of an empire beneath whose sway—no statement to be proud of—every disease in nosological nomenclature occurs daily, and the meeting place of the doctors of civilisation, and of the tropical disorders of the world. No centre offers such clinical opportunities to the post-graduate student, and no city has taken less trouble to display its wealth for the benefit of those, who, by obtaining a share of it, might disseminate what they thus obtained to the incalculable advantage of the world. The Fellowship of Medicine was founded because the congregation, in circumstances of war, of medical men from all parts of the United States and of our Dominions called for some practical outcome of the reunion. The most practical issue conceivable would be that those who joined the Fellowship would find themselves post-graduate students of the Metropolitan Medical Schools, and we trust that this is what may occur. This is said with no ignorance of the severe task of organisation that lies before those who would put any scheme of the sort into being. There is a great deal of spade work to be done before the London hospitals can provide some symmetrical yet flexible post-graduate scheme from which we and our Allies could derive real profit. But before the war Berlin and Vienna could give solid reasons why post-graduate students from other countries should resort to their clinics. Berlin and Vienna will issue no invitations in the immediate future, and if they did the invitations would be declined. The opportunity of New York and London is unparalleled: speaking only for London, why should it not be taken? Dr. HALE WHITE, on another page, asks the same question in pertinent manner.

To return to the doings of the Fellowship, the report, presented by Mr. MACALISTER, was supported by Sir STCLAIR THOMSON, who, in recommending its adoption, urged the desirability of establishing individual coöperation. He said that if volunteers would offer to take personally conducted parties to visit institutions a permanent *entente* would be created. This is true, but a series of disconnected and desultory visits to London hospitals will count for nothing that is permanent in pathology, however deep the memory of the casual hospitality may be. At the end of the meeting at the Royal Society of Medicine a general committee was nominated, Sir ARBUTHNOT LANE being appointed honorary treasurer and Sir STCLAIR THOMSON, Mr. DOUGLAS HARMER, and Mr. J. Y. W. MACALISTER honorary secretaries. To the officers of the new movement we would point out earnestly that one objective of the Fellowship is clear. It is the institution of a real post-graduate medical school in London, but the preparatory labour will not be light. Moreover, it will have to be undertaken with full knowledge of existing designs in the same direction. It will be necessary that the Fellowship should come into *rapport* with Sir WILLIAM OSLER and others, so that previous thought and accomplishment may not be wasted, and overlapping may be avoided.

Annotations.

"Ne quid nimis."

A SURVEY OF CRIPPLES.¹

BEFORE the participation of the United States of America in the war a survey of all the cripples of Cleveland, Ohio, was made (1915-16) under the auspices of the Welfare Federation of Cleveland. The cripples were located by house-to-house canvassing; to make the objects of the survey known, and to ensure a satisfactory reception of the canvassers the public were informed of the movement through the medium of the daily papers. A section of the public were too helpful; many of the poorer families went to great trouble to produce somebody who would pass for a cripple. The canvasser was followed very closely by the investigator who filled up the carefully drawn-up schedules. The whole of the expenses in connexion with the survey amounted to approximately £2400. As the result 4186 cripples were enumerated, a ratio of 6 per 1000 inhabitants. Of this number 2638 were males and 1548 were females, the preponderance of males being caused by accidents, especially occupational accidents. Seven per cent. of the disabilities were due to congenital causes, 43 per cent. to accidents—one quarter of which, at least, occurred during occupation—and 47 per cent. to disease, 3 per cent. being unclassified. As regards age distribution 22 per cent. were children under 15 years of age, 61 per cent. of working age (15-60 years), and 17 per cent. over working age. Each of these groups present different problems.

Of the children of school age, 246 out of the total 771 were not at school, although special classes for cripples were available. The combined needs of these children for education and care can only be met, the writers consider, by a hospital school. The solitary life of the crippled child at home does not afford the opportunity for the healthy competition upon a footing of equality which the cripple must have to gain the self-assurance and the self-reliance required to care for himself and manage his own affairs. The Massachusetts Hospital School is held up as a model. At this institution over 300 temporarily and permanently crippled children are cared for; the authorities pride themselves on the number of children restored to the ordinary public elementary school with their education as advanced as the sound children of their own age. An outstanding feature of the institution is vocational training by the apprenticeship system. In addition to the routine training by vocational instructors who devote the whole of their time to teaching, children who manifest an interest in a particular trade or occupation are attached to the institution as apprentices. One of the most gratifying results of the survey was its disclosure of the large proportion of cripples who were at work in some gainful occupation. No less than 1743 (59 per cent.) were earning a living; more than half of these were supporting a family or relations. A discount, however, should be made for those cripples not seriously handicapped for normal occupation.

Of the cripples of working age, an estimate of working capacity was made by the directors of the survey; they considered that 29 per cent. were

¹ Education and Occupation of Cripples: A survey, reported by Lucy Wright and Amy Hamburger, in Cleveland, Ohio. Publication of the Red Cross Institute for Crippled and Disabled Men, Series II., Number 3.

not seriously handicapped for normal occupation, 45 per cent. were capable of working at selected trades and processes, while 26 per cent. were too disabled to be able to work alongside normal persons. An analysis of the physical disability in relation to employment showed three groups with a large proportion of unemployed; these were combined defects of arm and leg, combined defects of limb and body, and defects of both feet or legs; many of these cripples used crutches or wheel-chairs, which hindered their finding employment. The unemployed included a small group—either invalids or aged—eager for occupation who could carry on home industries and make some contribution to their own support if they could be taught in their homes. An attempt was made to analyse the reasons for unemployment in the case of 859 cripples. Of these, 22 per cent. were in need of placement at selected trades or processes, 15 per cent. in need of special training or special conditions of work, and 5 per cent. in need of home employment. These are minimal estimates; further information would place in one of these three groups some of the 58 per cent. which, for various reasons, could not be classified; this number includes those who were not helpable, and the inevitable accumulation of those whom it was too late to help with any substantial hope of economic success. In addition to those unemployed, a number were found who were only partially employed or fit for better employment.

The directors of the survey recommend the establishment of a central bureau in Cleveland to represent all the forces touching the lives of cripples most closely—medical, educational, and industrial—and to promote the welfare of all cripples by devising means for providing the latest methods of surgical treatment, industrial training, and placement. Such a bureau would assist any effort in the way of research, educational campaigns, or legislation to prevent crippling. The report serves as a timely reminder that peace produces cripples no less than war. During reconstruction it is to be hoped that the efforts that were being made, notably by Belgium, to provide for the cripples of industry, but which were interrupted by the war, will be renewed with greater force, and that the lessons we have learnt from the treatment of the injured in war may be applied in their entirety to those injured in the battle of life.

THE HOUSING PROBLEM.

MEMBERS of the new House of Commons, when they take their seats, will have fresh in their memories numerous and pointed questions asked by their constituents as to their intention to support and press forward legislation for the better housing of the working classes, and the election will have made it clear to them that the working classes themselves are very keenly alive to the importance of this branch of social reform. In the metropolis the problems presented are perhaps more difficult of solution than elsewhere owing to the largeness of the areas covered by insanitary dwellings, but there exists everywhere the difficulty of providing homes for the inhabitants of such dwellings during the period of demolition and reconstruction, and apparently the policy likely to be adopted by some of the London boroughs is one of building outside their own areas for the benefit of their poorer inhabitants. This will, of course, necessitate increased provision of rail and tramway accommodation.

A recent inquest held by Dr. F. J. Waldo in the borough of Southwark illustrated the shortcomings of the existing system under which it is possible for slum areas to drag out their existence as such long after their shortcomings have been officially recognised and condemned. A chimney-sweep, 52 years of age, was proved to have died from natural causes, chronic bronchitis accelerated by self-neglect, in a single room, 9 feet by 6 feet in size, which he inhabited in a house in Tabard-street. Another chimney-sweep who had lived in the house for 53 years had allowed the deceased to occupy his room rent free, being himself the tenant of the county council at 8s. 6d. a week. The house had long ago been condemned, but apparently had been patched up pending its rebuilding, and these persons had been allowed to continue to inhabit it. The coroner, in addressing the jury, referred to the Tabard-street area as one to which he had frequently called attention—in this we can certainly bear him out—as having been for many years a source of danger to the public, and the jury in returning a verdict in accordance with the medical evidence, expressed their surprise at the continued use of houses after their condemnation as unfit to be inhabited. The war has no doubt put a stop during the past four years to building operations, but the conditions obtaining in Tabard-street were recognised and acknowledged by the local authorities responsible many years before August, 1914, and it certainly seems difficult to say what may be the importance of "condemnation" if it leads to no substantial improvement of the conditions which call for it. The houses of Tabard-street, however, do not stand alone in their unfitness to be the homes of working men and women in a great and wealthy city, and the delay in reconstructing them is not unprecedented or without parallel. The difficulty of dealing with the whole matter of re-housing is now complicated by the cessation of building operations due to the war, but the hopeful feature of the situation is to be found in the apparently general recognition of it to which we have referred. There should be no unemployment in the building trade or in those trades which provide building materials for many years to come.

MIGRATION OF A ROUND WORM INTO THE EAR.

THE entrance of a round worm into the ear from the alimentary canal is a recognised phenomenon, but so rare that the details of any case are of considerable interest. In the *Revue de Laryngologie, d'Otologie et de Rhinologie* Dr. H. Coussieu has reported the following case. A girl, aged 4 years, was brought to him for pain in the right ear which began suddenly eight hours previously. In spite of popular topical remedies she never ceased to cry, and the pain seemed to be paroxysmal. Dr. Coussieu suspected otitis media, but was surprised by the results of the local examination. The tympanic membrane was certainly red and bulging, but the latter condition was limited to the posterior half, and there was no pain in the position of the mastoid and no fever. Examination of the nose and pharynx was negative. Instillations of hot carbolic glycerine and hot compresses were prescribed, with instructions to bring the child on the following day if these means did not give relief. Twenty-four hours later the child was brought again. She had suffered much since the previous day. The membrane was redder and more bulging.

Under local anæsthesia paracentesis was performed, and Dr. Coussieu was surprised not to obtain pus. Hoping the pain would subside after the paracentesis, he left the child in charge of a colleague who was summoned on the following day. The pains became worse and worse, and during the night an attack of syncope, crises of nystagmus, and general convulsions occurred. The meatus was blocked by a vermicular body, like that produced by pressure on a tube of pomade. The practitioner seized the body with a forceps and brought away a living male ascaris, 15 cm. long. The child went to sleep and slept for the greater part of the day. The tympanic incision quickly healed, and recovery was complete. No history could be obtained of the passing of worms. Dr. Coussieu thinks that the pain began when the worm entered the Eustachian tube. On the first examination, eight hours later, it had entered the tympanum and produced bulging of the membrane. It finally escaped by the incision.

MOTORING—PRESENT AND FUTURE.

THE release of petrol, which is to take place on Jan. 10th, should ensure to the medical motorist that sufficiency to carry on his arduous duties which has been denied to him for some months past. Many have had to give up their cars altogether, and most of the remainder have been harassed by the tiny quantity doled out to them. Add to the deficiency of the supply its execrable quality, and the medical motorist may well look forward to better times in more directions than one. Not the least pressing consideration at the moment is the problem as to what cars are likely to be on the market in the near future, and how far and how soon they will offer advantages over pre-war designs. Post-war cars will consist, first, of those produced directly the makers are able to supply anything to the public, and of these there is little to say. But cars produced later as the result of experience gained with motor-car and aero engines during the war will embody many new features and possibly startling novelties; but—only in the future. The first cars to be placed upon the market will not differ very much in appearance or design from their predecessors—except, perhaps, in price. War conditions will have taught the manufacturers to improve the springing and strength of the axles. The present low quality of petrol, which tends to engine fouling and difficult starting, suggests that combustion heads will be detachable and machined, so as to permit of more easy cleaning and less likelihood of carbon deposit. Some device, too, will be fitted to assist the vaporisation of the heavier fractions of the imperfect fuels. Ignition on the cheaper cars may be by coil and accumulators charged by a generator, but the satisfactory high-tension magneto will continue on most cars. Lubrication will probably be automatic, and mechanical starters and electric lighting will form part of the standard equipment. Makers may have embodied many new features in prepared designs, but they have mostly been engaged on munition work and cannot have given such designs practical tests. Before doing so they are not likely to make use of them for the public, at the possible risk of damaging the reputation of their products.

Three points are just now exercising the minds of many motoring doctors—viz., whether to continue with their present cars, having them overhauled if needful, or to dispose of them and try to buy a second-hand War Office car, or to order a new car. The condition of the present car should

certainly influence the decision. The pre-war car must by now have revealed its good and bad points, and often the ills we know of are better than those we know not of! Many of the 1913 and 1914 cars are excellent, and, if desired, can be brought up to date. Shock absorbers or spring gaiters will ensure smooth running, even on our present rough roads. An extra air-inlet on the intake pipe will permit the use of benzol, while a compromise for a mechanical starter may be found by priming the engine with a mixture of equal parts of petrol and ether, which will help to do away with the morning starting exercise. As to the second-hand war cars, it is said that the Government have some 100,000 to dispose of. It has been suggested that it would be a good idea if the respective makers repaired them prior to their disposal, or even took them over and sold them on behalf of the authorities after putting them into thorough running order. If this be done it will not be so great a lottery, though even then some blanks may be drawn. Paint and varnish may camouflage a badly worn engine.

A certain number of makers have already a 1919 programme, but few can give actual dates of delivery. Some, though they are willing to put names on the waiting list, cannot yet state the price. For six months after peace is declared war wages will have to be paid, and materials are at present rationed and high in price. The car-buyer must expect to pay this increase in cost of production. In the meanwhile improvements will be experimented with, and ultimately, when materials and wages reach the normal, though it may never be a pre-war level, then with standardisation a fairly cheap and reliable automobile will be obtainable. It is doubtful, however, whether this position will be reached before 1920. After production really starts there should be a tendency with each month for prices to drop.

"ROYAL" ARMY VETERINARY CORPS.

His Majesty's approval of the prefix "Royal" to the title of the Army Veterinary Corps marks a distinct advance in the status of the military side of the veterinary profession; and, inasmuch as by far the greater bulk of the A.V.C. is at present composed of civilian practitioners with temporary commissions, it is an acknowledgment of the present position of British veterinary science in general. All professions have been afforded an opportunity by the war to prove their worth, and the veterinary profession has responded manfully. Quite recently Major-General Sir Frederick Smith made public some of the work which has been done by the British A.V.C., and it is gratifying to learn from other sources that the French and American Veterinary Corps have acquired much from British methods. The organisation of the corps has been perfected under war conditions, and hospitals have been erected and equipped at the various fronts in a manner that has called forth unstinted praise. It is announced that in regard to the animals treated at the various surgical and special hospitals and at the convalescent depôts on the Western front, recent figures show that 72 per cent. have been evacuated to the Remount Department for re-issue to the front. The percentage of discharged animals has been higher than this, but after four years of war the age of the animals has had its effect on the number of patients judged fit for further active service. As in all previous campaigns, contagious diseases have accounted for a large proportion of admissions

to hospital; these, however, have been so successfully dealt with that contagious diseases of all kinds were responsible for less loss at the time of signing of the armistice than at any other period of the war.

ACIDOSIS AND ITS SIGNIFICANCE.

THE seventh report of the "Special Investigation Committee on Surgical Shock and Allied Conditions," which was appointed by the Medical Research Committee in August, 1917, deals with the controversial question of "acidosis." The name itself is a somewhat unfortunate one for the state which it is used to designate—namely, that in which the normal reserve of potential alkali, practically sodium bicarbonate, in the blood has become reduced below about 70 per cent. of its proper value. It suggests that the reaction of the blood has been changed towards the acid side. This is very rarely the case. We have but to remember that, putting the matter somewhat crudely, blood is made alkaline by the sodium bicarbonate, acid by the dissolved carbon dioxide; so that, if the former goes down, it is only necessary to reduce the latter in proportion in order to maintain the hydrogen-ion concentration at its normal value. The removal of carbon dioxide is effected, as is well known, by increased activity of the respiratory centre. Since it is actual increase of hydrogen-ion concentration that is responsible for the physiological effects of acidity, as shown in Section VI. of the report, it is difficult to see how, apart from this, a reduction in the concentration of sodium bicarbonate should have such serious results as are attributed to the state of acidosis. But it has been found that not only in wound-shock, but after anaesthesia and in diabetes, the alkaline reserve is reduced, and certain observers have held the state of wound-shock to be essentially due to this factor. It is obvious that an important question of treatment is involved. If the decrease in bicarbonate is the actual cause of the state, no further treatment should be required than the administration of alkali. It was therefore necessary to subject the question to a thorough experimental and critical examination. The results of this are given in the report before us. The original report must be consulted for the methods used and details of the experiments. We must be content here with a summary of the conclusions arrived at.

The first point tested was whether the reduction of the alkaline reserve in normal animals has any serious consequences. Although this was reduced by the injection of acid to a lower level than that of the most severe cases of diabetic coma reported, the cats and rabbits used showed no abnormal symptoms, except some slight dyspnoea on exertion. This conclusion is the more convincing because some members of the committee had at one time obtained shock-like symptoms by the injection of acid, but they were ultimately completely convinced that their results were not due to acidosis. The next question discussed is, "Does acidosis favour the production of shock by other agencies, such as hæmorrhage, histamine, peptone, adrenalin, vaso-motor paralysis?" No evidence was found that there is any such effect, except perhaps that acid may exaggerate the depressant action of some anaesthetics. If, then, we are led to the conclusion that acidosis does not produce shock, either directly or indirectly, it is necessary to account for the fall of bicarbonate reserve observed in shock. Evidence is given in

the report that this is the result of defective supply of oxygen to the tissues, brought about by the slowed circulation. Details are given of experiments in which a low blood pressure was produced in different ways, with the result of acidosis of varying degrees of severity. The experiments of Wright and Colebrook, published in these pages,¹ confirm this conclusion. The next section is a valuable account of the factors controlling the reaction of the blood, showing the distinction that is to be made between a reduction of bicarbonate reserve and a real increase in acidity; while the final section describes briefly the methods in use for the actual determination of either of these properties. From the practical point of view emphasis is laid on the cardinal importance of maintaining an adequate oxygen supply to the tissues. Since an increase in the acidity of the blood stimulates the respiratory centre to increased ventilation of the lungs, the production of acid in the tissues tends to correct itself in this way, so that the introduction of alkali may even be injurious. But a significant conclusion drawn from experimental evidence is that "oxidation in the tissues is far more easily rendered inadequate by defective circulation through the capillaries than by a reduction either of the oxygen-carrying power of the blood or of oxygen-tension in the inspired air." As much as 75 per cent. of the total blood volume can be removed from the circulation without harm, provided that it is replaced by gum-saline solution. The value of measurements of the bicarbonate reserve is that they indicate deficient circulation and the need for increasing the volume of the blood. A good supply of oxygen by the blood to the tissues is obviously of importance in restricting the spread of infection by anaerobic organisms. The question of gas gangrene is discussed in a special section, and experiments are given which show that the failure of the circulation cannot be attributed to the production of acid.

MR. HENRY SANDFORD.

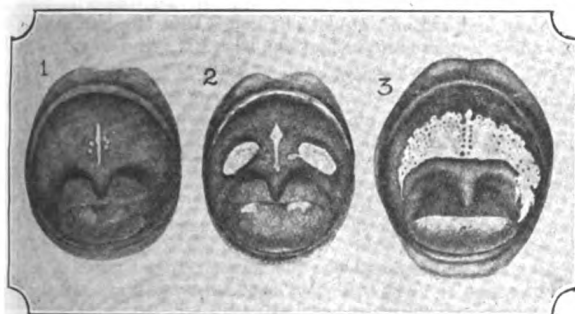
ON Christmas Eve, at his house, Bladen, Bromley, Mr. Henry Sandford, the solicitor to this journal, died in the 86th year of his age. Nearly ninety years ago Thomas Wakley, the Founder of THE LANCET, in one of the worst of his many legal embroilments, turned to the firm, of which Mr. Henry Sandford was the senior representative at his death, for help and advice. The firm then included one of Wakley's cousins, and from that time the same firm, now under the style of Potter, Sandford, and Kilvington, has advised the proprietors and editor of THE LANCET to our great benefit.

ALOIS EPSTEIN.

Professor A. Epstein, whose recent death in his seventieth year has escaped general notice, was not only director of the principal children's clinic in Bohemia but had at his disposal the whole of the Prague Foundling Institute for teaching purposes. This combination accounts for the fact that his clinical teaching was so fruitful in result at home and so widely accepted over the world. Epstein's life was, in fact, devoted to the physiology and pathology of the new-born child, and the immediate result of his medical direction of the foundling institution was a drop in mortality from almost incredible figures to 5 per cent., where it has since

¹ THE LANCET, 1918, I, 763.

remained. Excellency Czerny, who writes of the great loss to German pediatrics from Epstein's death, fears that his clinic at Prague will be lost as a German teaching institution. That may well be, but the work which he initiated in Bohemia is, nevertheless, likely to outlive him. Epstein was himself a Bohemian, born at Neuhaus, and graduating M.D. of Prague University. Later he became a corresponding



1. Bohn's palatine nodules. 2. Bednař's pterygoid ulcers. 3. Epstein's pseudo-diphtheria.

member of medical academies in many lands. The pseudo-diphtheria of the new-born specially associated with his name he showed to be the end-stage of the palatine nodules described by Heinrich Bohn and the pterygoid ulcers of Alois Bednař, and all of them due to the mechanical cleansing of the mouth practised by the ignorant midwife or mother. The comparative series of three illustrations of this interesting infection is taken from Dr. A. R. von Reuss's "Diseases of the New-born." Stomach lavage in the suckling and sepsis occurring within the first few days of life were other subjects which Epstein made peculiarly his own. In a single year among 702 children at the Prague Foundling Institute he had 61 cases of septic gastric hæmorrhage. He was also an authority on the manifestations of tuberculosis at an early age.

Dr. I. D. Chepmell, who died on Christmas Eve at his house in Worthing at the advanced age of 90, practised for many years in London and in Paris. He ascribed his long maintenance of robust health to the practice of fencing, of which he was a keen exponent. One of his most distinguished and ever grateful patients was Robert Louis Stevenson. While he was in Paris he acted as Paris correspondent to THE LANCET.

A FIRST instalment of the usual New Year Honours contains the names of three medical men upon whom knighthoods have been conferred. These are Dr. William Leslie Mackenzie, medical officer to the Scottish Local Government Board; Dr. George Dancer Thane, professor of anatomy at University College, London, and principal inspector to the Home Office under the Cruelty to Animals Act, and Lieutenant-Colonel John Hewart, Member of the House of Assembly of the Union of South Africa and Assistant Director of Medical Services of the Union. Sir George Anderson Critchett has been promoted to knighthood in the Victorian Order, and the services of Dr. Robert Bruce Low, late assistant medical officer to the Local Government Board, are recognised by a Companionship of the Bath. To these and others whose names are recorded elsewhere in this issue we offer in the name of the medical profession hearty congratulation.

ON THE TEACHING OF MEDICINE.

BY W. HALE WHITE, M.D. LOND. & DUB.,

COLONEL, R.A.M.C. (T.); CONSULTING PHYSICIAN TO GUY'S HOSPITAL.

RECONSTRUCTION is in the air and it is much to be hoped that ere long the teaching of medicine will be reconstructed and improved. No one should take part in rebuilding the means by which those who study medicine are taught unless he has studied "Some Notes on Medical Education in England" by Sir George Newman, K.C.B. Every reader will feel, when he has finished this admirable pamphlet, that medicine demands such wide knowledge, such high training in clear thinking, such experience in the art of observation, such fostering of research, such judgment in separating the true from the false, and is withal of such importance, not only to individual sufferers but to the well-being of the community, that no trouble or expense is too great to get it taught as well as we know how. Most of us who have had experience of teaching medicine will surely agree with nearly all Sir George Newman's suggested improvements, radical as they are, and would like to see them carried into practice forthwith. The following comment is put forward partly in the hope of keeping alive interest in the matter and partly because the writer has for many years devoted much energy to the teaching of clinical medicine.

Post-graduate Teaching.

Towards the end of the "Notes" Sir George Newman tells us of four main things lacking, and the fourth is post-graduate teaching. It is in this that we are most deficient. Up till now the ordinary medical student has been taught, often by no means as well as he should be, teachers have been found, but frequently they have been atrociously paid, research has been carried on, but under difficulties that should never have hampered it, but the post-graduate in this country has been left without guidance and without any but the poorest encouragement except in the Services. We all trust that one result of the war will be a friendship between those speaking the French, Italian, and English languages, which will make some of us wish to go to our friends' countries and some of them to come to us to study medicine. The wealth of clinical material in London is so great that it is to this city they should be attracted, but unless we make things very different from what they were before the war there is little to tempt them here.

The first improvement in medical education should be to put post-graduate teaching in London on a proper footing, not only for the sake of our visitors and our own doctors who want to come back for a few months to bring themselves up to date, but for the sake of our own prestige. But if it is to be efficient it must be separated from the teaching of ordinary students; at least, that is my experience. Two courses are open, either to have a large hospital and medical school, complete in all clinical departments, devoted to post-graduate teaching only, and this is probably the best, or to have post-graduate teaching at ordinary medical schools, but during the months that the clinical teachers are engaged in post-graduate work they must be absolved from teaching the ordinary student either at the bedside or by lectures. He is best taught in most cases by the clinician who is not past 45 or 50; on the other hand, a post-graduate clinical teacher is probably at his best from 45 to 55, for then he has a wealth of experience, and let us hope has not become unprogressive and discursive. It might be a good thing if there were a separate post-graduate teaching institution, to promote a teacher who had been successful in interesting ordinary medical students in any British school to a clinical post in the post-graduate school, for we should thus be able to secure for it teachers who had already proved their capability to teach.

To put post-graduate instruction in London on an entirely new and a thoroughly efficient basis will require much money and much hard work, but most emphatically it ought to be done and on a large scale, for if first-rate teachers are provided a post-graduate school will attract large numbers of students. Should it be decided to have such a school separate from the ordinary medical school, the difficulty will be to find a large hospital, and it must be large, to provide sufficient clinical and post-mortem material. It must contain all the special departments of a modern hospital, including, if possible, buildings for infectious cases, mental cases, and a lying-in charity. Professors in the clinical subjects

must be appointed, and in addition, there must be professors of clinical chemistry, pathology, and bacteriology, each with well-equipped laboratories. All the professors must be so well paid that they will be able to devote their whole time and energy to teaching and research in the school. Teachers in clinical subjects other than the professors might be allowed private consulting practice. Wherever the post-graduate school is situated there should be close to it a large hostel, with a library, common rooms, and sleeping accommodation for the students who come to it.

The Medical School.

In a medical school teaching ordinary medical students there certainly should be properly paid professors of anatomy, physiology, pathology, bacteriology, clinical chemistry, and pharmacology, and if the preliminary subjects of chemistry, biology, and physics are taught at the school professors of these also. All should be experts in their science, capable of teaching, skilled in investigation, and able to help students to investigate and to think for themselves. It may be said that, judging by our experience, it will be difficult to find enough suitable teachers. The answer is that these posts have up till now in most cases been miserably paid. Let each of these professors have proper status and pay and plenty of men will be found. Supply follows demand. Hitherto many who would have enjoyed a life devoted to these subjects have been forced to the clinical side of their profession in order to gain a livelihood. It seems often to have been thought that all that is necessary to make an efficient school is to build laboratories. The man matters far more than the buildings in which he is housed. Sir George Newman would ensure proper payment by State aid, others prefer the addition to students' fees to be by endowment by private benefaction, but, be that as it may, the fundamental fact is that you cannot expect able men to take these posts unless you give them the position and income to which their ability entitles them. If it is objected, with regard to London, that with so many medical schools as there are there, it would be impossible to pay, as they should be paid, the large number of professors required, the answer is that there ought to be in some cases amalgamation between certain of the present schools; it is well known that something has already been done in this direction with regard to the earlier subjects.

Outline of Scheme.

Turning now to the purely clinical subjects, and taking medicine as an example, some such plan as the following would be, it is suggested, the best way to deal with it, and might, with necessary modifications, be applied to other clinical branches. To teach to the best advantage it is necessary to have plenty of material, and for a large medical school there ought to be, say, 220 medical beds. There should be a professor of clinical medicine who should be physician to 80 of these beds, and two other physicians with 50 beds each. There should be four assistant physicians, each seeing out-patients once a week, two corresponding to the professor, each with 10 beds, so that these assistant physicians should have beds into which they could send, from out-patients, patients whom they wished specially to watch. Of the other two assistant physicians one should correspond with each of the other physicians, and should in addition have 10 beds of his own, for the purpose just mentioned. When the professor is away on a holiday or from illness, his work in the wards should be shared by his two assistant physicians, and when either of the other two physicians is away his corresponding assistant physician should take charge of his beds.

In addition to his ward work, the professor should see out-patients one day a week, so that on five days a week medical out-patients will be seen; he and the four assistant physicians should do out-patient teaching on the days on which they see out-patients. Students will be appointed as out-patient clerks, who will make notes of the cases, and generally assist, and learn at out-patients from the professor or the assistant physician, as the case may be. The two physicians other than the professor should each do bedside teaching three days a week, and the professor should do bedside teaching five days a week. Every ordinary student will work in the medical wards as medical ward clerk for six months, for three of these with the professor and for three with one of the other physicians, half of the students being with each of these physicians; but as every student will work in the wards under the professor, he, having double the number assigned to each

of the physicians, will divide his clerks into two sets. Some of the abler students will have longer than six months in the medical wards, for they will hold the post of clinical assistant, and if qualified that of house physician. Both physicians and the professor will give clinical lectures, one being delivered each week.

The professor will devote his whole time to the duties of his office, he must have what laboratory accommodation he needs, he should be of such a temperament that he can teach clinical medicine and undertake research, and he must do everything he can to encourage and help all who wish to do research under him. It is to be hoped that the assistant physicians will pursue investigations with his sympathy.

Consideration of Some Details.

In details this scheme is a little different from Sir George Newman's. In the first place, the professor is not to engage in private practice. This, I feel, is the right line to adopt. If a man has an aptitude for private practice it is almost impossible for him to say he will only do a little. Quite apart from the fact that if it becomes part of his source of income he can hardly be blamed if he pursues it honourably, there are many cases, and often the most trying, which if he is asked to see he must see; he cannot refuse to go. The professor ought to be so well paid that he can always say he does not engage in private practice. He will then be freed from all its thousand and one worries, and he will have time to think out the problems of medicine that need investigation; he will not be liable to be called off from his laboratory work, and he will have leisure to direct research amongst those working under him.

In the second place, there are other physicians and assistant physicians than the professor. The advantages of this are many. It is desirable that the student should learn medicine from more than one teacher, for it is an art as well as a science, and it will be of distinct benefit to the learner to hear different opinions, to see different methods of treatment and diagnosis, and to observe different lines of thought. Every student on the plan suggested will get part of his training from the professor, a physician, and an assistant physician; this must widen his horizon and help to give him that breadth of outlook which is such a desirable part of real education. Further, no single professor could possibly treat and look after the numerous medical in-patients that a large school ought to possess. The student cannot have too much actual contact with patients, and each should have enough cases assigned to him for note-taking to keep him busy in the wards. He will pay special attention to his own cases, and will at the same time observe and learn under the direction of his teacher from the cases of his fellow-clerks. Also no single teacher can properly teach more than about ten clinical clerks at the same time, for he ought to get to know the minds of each of his clerks so as to help each individual one over his particular difficulties. Other students may come round with the professor and physicians, the more the better, for a large audience brings out the best in a teacher, but his particular attention must be his own clerks.

Lastly, it is much better for the professor himself to have others in the same school teaching medicine; both he and the others mutually stimulate each other. If there is more than one teacher of medicine, each is prompted to try his hardest, so that his teaching may be as valuable as, if not more valuable than, that of his colleagues.

Conditions of Appointment of Staff.

The assistant physicians should be well paid for their teaching, but they should be allowed private practice. In medicine this does not come in great amount to the young, so that the assistant physicians being properly paid would be able to throw nearly all their energy into teaching and investigation. The two physicians, other than the professors, should receive good payment for their bedside teaching and clinical lectures, but this need not be on the scale of the professor's pay, for they should be allowed private practice, and in order that they should be saved from the temptation in later years of neglecting their teaching for private practice they should retire from the hospital at an age certainly not later than 55, the precise age depending on how their private work interfered with that in the hospital and upon the quality of their teaching. The professor should retire at the age of 60. If something of the plan here sketched for medicine were applied to surgery perhaps other ages for retirement would be more suitable.

An advantage of this early retirement would be that the promotion of the assistant physicians would be quicker than it is now. Of the four assistant physicians, two might look forward, if they had proved their value to the school, to a full physician's post, one to a professor's post at his own or some other school, and perhaps one out of the four would ultimately teach at a post-graduate school or practise some special branch of medicine, and, bearing in mind such transference, possible losses from early death or ill-health, and the failure of some to be good teachers, four is often not more than enough to replace three. When an assistant physician is appointed the appointment should at first be for three years only, so that if it were discovered that he had not the art of teaching he need not be reappointed unless it were desirable for other reasons—such as brilliant research—that he should. Those on such a hospital staff who are allowed private practice should confine themselves to purely consulting practice. My object is only to give a general outline of the teaching of clinical medicine, as no mention has been made of how far assistants or demonstrators shall be employed for rudimentary teaching; the practice would vary in different schools.

Special Departments.

In a properly equipped medical school the special departments of medicine should present little difficulty. There should be a physician for children's diseases, who would see out-patients and have charge of a good-sized children's ward, and a physician for mental diseases, also with charge of out-patients and suitable wards for the treatment of early cases. The physician for skin diseases should also see out-patients and have some beds. Many of the commoner nervous diseases, such as cerebral hæmorrhage and chorea and tabes, are best taken into ordinary medical wards, so that the students can learn from them in the course of their ordinary medical work, for such cases will come before them very frequently in general practice, but probably it would be well to have a separate out-patient department for nervous diseases. It would be a great advantage to a medical school to have a fever hospital near to it. The students attending their course of fevers would not waste time going long distances, and those in charge of the general hospital and those in charge of the fever hospital would be able to meet frequently to interchange ideas, and the advice of the professors of medicine, pathology, and clinical chemistry, and the use of the corresponding laboratories would be of help to the physicians in charge of the fever hospitals for any investigations they might want to undertake. I am aware that in this sketch more beds have been assigned to medicine than is possible in some hospitals, but I have put forward the numbers here mentioned as the ideal number when the students are numerous.

Pharmacology and Therapeutics.

The complete medical school must have a properly paid professor of pharmacology with a well-equipped laboratory. The great want is a closer connexion between the professor and clinical work. It would not be wise to give the pharmacologist charge of beds, for he has usually done little clinical work, and before the drugs can be given to a patient the physician in charge must find out what is the matter with him; this is the duty of a clinician, who can usually do it better than a pharmacologist, whose training lies in devising experiments to discover the mode of action of drugs. But there should be close friendly coöperation between the clinician and the pharmacologist, who should be encouraged to go to his clinical colleagues and say, "I want to observe the effects of such and such drugs on such and such diseases; let me know when you have suitable cases, and I will come and make the observations I desire." The clinician would, by seeing the results of the observations, be adding to his own knowledge. Often, too, he would be able to suggest to the pharmacologist fruitful lines of research; it would be a great gain to the progress of medicine if researches at the bedside were made hand-in-hand between the pharmacologist and clinician and published under their joint names.

Sir George Newman has been unfortunate in the impression he has formed about the teaching of therapeutics. He says, "The case is diagnosed and its treatment prescribed, but such treatment is but rarely closely observed or assessed by the student," and again, "Is he a doer of the word, or only a hearer?" Every good clinical teacher, after he has explained to the students how the diagnosis is reached, goes on to talk

over with them the details of the treatment, not only by drugs but by many other methods; he discusses what kind of life the patient should lead, what he should eat and drink, where he should live, and what occupation he should follow; what therapeutic means other than drugs should be employed, such as massage, remedial exercises, electricity, X rays, and so forth; and while the patient is under observation in the hospital he from time to time points out the success or the failure of the therapeutic means that have been adopted. Every single patient that comes into the hospital ought to be the subject of a therapeutic discourse.

A first-rate medical school will have attached to it the necessary therapeutic departments—e.g., massage, remedial exercises, electrical and others, in which the student can see the carrying out of all these special treatments, but it will be a bad thing to have a special teacher of therapeutics—bad for the professor of medicine and the other physicians attached to the hospital, for they will cease to be first-rate physicians if they do not fully know how to treat their patients, and if they do know, why should they not impart their knowledge direct to the students, instead of its filtering through a professor of therapeutics? Should this subject be taken away from clinicians it will have an evil effect upon the students, for they will be encouraged to believe that the treatment of the patient is a thing apart. There has been too much of that in the past. The duty of the physician is to find out what is the matter with the patient, and to treat when possible the condition found. He should frequent the departments where special treatments are carried out, and he must keep himself abreast of all new therapeutic suggestions. He should have an open mind and be able to assess each mode of treatment at its right value. Sir George Newman quotes with approval a lecture course and the accompanying therapeutic clinic thus: "(3) to discuss the pathology of the case and the precise purpose of treatment; (4) to review the relative value of the means of accomplishing the object." This is exactly what the clinical instructor should do as part of his bedside and lecture teaching. If he does not do it he ought, and I hope that it is rare for the student to be "actually unaware of the medicinal treatment to which the patient is subject." If his clinical teacher has not made him aware of it great blame attaches to the teacher, and the cure lies not in appointing a professor of therapeutics, but in getting a better man to do the clinical teaching. However, there is little difference of opinion between Sir George Newman and myself, for although his report covers the whole of medical education, this is the only principal point in which I differ from him.

Pathology and Bacteriology.

Just as the clinical teacher will discuss with his hearers the diagnosis, prognosis, and treatment, so he should indicate to them the pathology of the disease from which the patient is suffering, for this will be necessary to explain the symptoms scientifically. Although the key to many symptoms is to be found in the pathological laboratory rather than the dead-house, yet there are few diseases without some morbid anatomy, and the bedside teacher will, out of hearing of the patient, indicate to his class what might be expected to be found on post-mortem examination, and if the patient dies he should take the students to the post-mortem room and point out how far the conditions found there can be correlated with those observed during life. The most essential thing in teaching medicine is to train the students to visualise what is wrong inside the patient. I frequently take my students away from the bedside to say to them, "Supposing we this very afternoon killed this patient, tell me what you would see on post-mortem examination, for unless you can do that you have not really conceived what is the matter with him."

The professor of pathology will not be the least busy of the professors; pathological research is so fascinating that he will have plenty of enthusiasts working under him whose work he will direct. In addition, he will have his own original work and lectures, so that while, of course, he will have complete control of the dead-house, and, if he likes, make some post-mortem examinations, a great many should be made by the assistant physicians, for, other things being equal, the man who has made most post-mortem examinations is the best physician and the best teacher of medicine. The greatest corrective to any slovenly habits of diagnosis is the knowledge that if the patient dies it may be open to all to see if the diagnosis is correct; therefore students must be taken into the post-mortem room as much as possible, and particularly

when a post-mortem examination is made on any of the cases they have seen during life. The advantage of this in training them to proper diagnoses cannot be overestimated.

The precise relationship of the professor of bacteriology to the professor of pathology will, no doubt, vary in different schools, but ample provision must be made for bacteriology, and the head of the department should be well enough paid to render private practice unnecessary. Indeed, in a large school he should not have time for it as there will be laboratories to be controlled, numerous investigations from in- and out-patients, classes for students, his own research, and many doing research under him who will need advice.

Modern advancements have made a clinical chemistry department absolutely necessary. Good laboratories are essential, and the professor should be on the same footing as those already mentioned. Experience has shown that a large hospital and school will keep him fully employed in routine work from the wards, in teaching, in his own researches, and in those of others.

Examinations.

Before we can get the medical students properly taught the prevailing system of examinations must be altered. There is no doubt that, as at present conducted, they impair teaching, especially the best, and frequently fail to separate the goats from the sheep. I have conducted many examinations, and am fully aware of their shortcomings. It is difficult to frame questions that cannot be as well answered by a student with a retentive memory for what he has read or been taught by a coach, as by one who has gained his knowledge by bedside observation. It is even more difficult to devise a clinical examination that shall fairly test the candidate who, when left quietly to himself, is quite good at his clinical work, yet "goes to pieces" when he feels that everything depends upon his hearing particular murmurs in a limited time. A teacher's opinion as to the fitness of a particular candidate to pass ought to be at least as good as that of the examiner who only knows his man for as many minutes as the teacher knows him for months. Somehow or other, a plan must be devised in which the bedside and laboratory work done by the candidate during his training counts in the examination. This will stimulate the teacher and stimulate the student.

"University Education."

There is no need here to try to explain what is meant by the phrase "university education," for it is fully and admirably expounded by Sir George Newman in Section 3 of his "Notes" and is there illustrated by noble quotations, of which perhaps the finest is that from John Henry Newman's Lectures. But this is certain, that in medicine of all professions the teaching should endeavour to reach the high ideals denoted by the phrase "university education," for he who practises medicine has to deal with a science as well as an art, his mind must be accustomed to the hard facts of the dissecting room and the laboratory, to the process of reasoning required to reach a diagnosis, to the skill necessary to conduct correct treatment, and to the judgment of the proper way of dealing with human beings. His education must not only have taught him facts but must have trained his mind how to think, how to appreciate the relative value of facts, and how always to be receptive of new discoveries and new aspects of old questions. Indeed, it is doubtful whether any profession requires that width of training implied by "university education" more than that of medicine.

The teachers themselves should remember, too, that all through their lives they must educate themselves. It has been too much the habit of some to remain in their wards, others in their laboratories. They should frequently meet; half an hour's conversation between a physician and a physiologist or chemist does immense good to both. In a medical school aspiring to reach a university standard there should be a common room in which all the teachers can meet and exchange views, and each should know the others well. Frequent meetings will have this further great advantage, it will encourage "team-work." In order to solve almost any medical problem it must be regarded from several standpoints. It is to be hoped, therefore, that in the future we shall see much more "team-work" than we have in the past. Speaking generally, "team-work" papers are more complete than those of individuals and contain fewer mistakes, for before publication each author has been able to be a friendly critic to the others.

THE STANDARD ILLUMINATION OF SNELLEN'S TYPES.¹

THE Council of British Ophthalmologists have been well inspired in investigating the circumstances under which Snellen's types are used in testing the vision of candidates for the public services. It has long been realised that in the absence of any standard method of illumination great injustice might be done to candidates. The conditions, for example, on a November day on a ground floor are hardly comparable to those of a well-lighted upper room in summer. The Council of British Ophthalmologists, which consists of the Presidents, past and present, of the Ophthalmological Society of the United Kingdom and of the Section of Ophthalmology of the Royal Society of Medicine as permanent members, is reinforced by elected members both from the society and from the section, and for the purpose of carrying out the investigation the following were appointed as a committee:—Sir George Berry (chairman), Sir Richard Glazebrook, O.B., F.R.S. (Director of the National Physical Laboratory), Mr. O. C. Paterson, O.B.E. (National Physical Laboratory), Mr. Leon Gaster (secretary of the Society of Illuminating Engineers), Mr. J. Herbert Fisher, Colonel J. Herbert Parsons, Mr. A. B. Oridland, and Mr. W. H. MacMullen, O.B.E. (secretary).

The report runs as follows:—

The effect upon visual acuity of variations in the illumination of test objects has been the subject of a series of careful investigations since the time of Tobias Mayer (1744). Two chief facts emerge from these researches: (1) That there is a rapid rise in acuity as the illumination is increased from zero up to about 2 foot-candles; (2) that above 2 or 3 foot-candles there is scarcely any appreciable rise in acuity. The results obtained by different observers are not entirely concordant, the discrepancies being attributable to variations in the test object, contrast, size of pupil, &c. So far as the testing of visual acuity for clinical purposes is concerned, it appears to be sufficiently accurate to regard the results obtained with an illumination of 3 foot-candles or more as valid and comparable under the ordinary conditions of clinical testing.

There is, however, no doubt that this minimum is by no means always ensured under the actual conditions in which the testing of candidates for military or other public services occurs. Apart from the fact, which should be borne in mind, that the test types often do not conform to Snellen's criteria, they are frequently dirty, the diminishing contrast, are tarnished, thus giving rise to disturbing direct reflection of light and are viewed under very great variations of daylight in rooms which are often ill-suited for the purpose.

It is possible to lay down precise and simple rules for the efficient illumination of test types, and we see no reason why these rules should not be generally adopted. For the public services it is, in our opinion, unfair to the candidates and detrimental to the services themselves that examinations should take place under unsatisfactory, and often hurriedly improvised, conditions. The testing of visual capacity is now an essential part of the physical examination of candidates for a large number of the public services, such as the Navy, the Army, the Mercantile Marine, the Indian Civil Service, and so on. We are of opinion that these tests should be conducted under approved conditions, and that this object would be best attained if the examinations were held at properly equipped centres.

We fully recognise that variations of visual acuity arise from many causes other than the actual illumination of the test types, such as the condition of retinal adaptation, contrast between the test object and its background, the size of the pupil, lateral illumination, and so on. We think, however, that these effects can be minimised sufficiently for practical clinical purposes if the testing takes place in a moderately well-illuminated room, with the test types efficiently lighted, and with the careful elimination of any glaring lights, or bright objects from the candidate's field of vision.

We consider that the requirements are sufficiently well satisfied by the following means: Two ordinary 20 watt tungsten lamps (see diagram, L1, L2) with straight filaments are fixed vertically 15 inches in front of the plane of the test card (A, B), one on each side, at a horizontal distance of 12 inches from the vertical plane normal to and bisecting the card. One lamp is placed higher than the other, one being opposite the junction of the upper and middle thirds of the card, the other opposite the junction of the middle and lower thirds. Opaque non-reflecting screens (S, S') are fitted, so as to prevent direct light from the lamps reaching the candidate's eyes.

This method ensures:

(1) Sufficient illumination. With new lamps the illumination on the test types will be of the order of 10 foot-candles. The ordinary variations of current, deterioration of lamps, and the darkening of the test card with age will not reduce the brightness of the test card so illuminated to a value less than that of a perfectly white surface receiving an illumination of 3 foot-candles.

(2) Sufficient uniformity of illumination. Whilst we are aware that the same result can be achieved by the employment of properly designed and carefully placed reflectors we have had to recognise in making these proposals that the testing of visual acuity must often be carried out in circumstances which do not admit of the use of

¹ Report on Standard Illumination of Snellen's Types used in Testing the Vision of Candidates for Public Services. Published for the Council of British Ophthalmologists by G. Pulman and Sons, Ltd., 24, Tavener-street, London, W. 1. Price 6d.

* One foot-candle is the illumination received from a source of one candle-power falling perpendicularly on a surface at a distance of 1 foot from the source.

special lighting arrangements, requiring technical skill in their installation or upkeep. We have, therefore, endeavoured to prescribe a method of ensuring the necessary illumination which is simple to erect, is not liable to become deranged by subsequent treatment, and which enables ordinary lamps on the market to be employed.

Where electric light is not available a similar arrangement can be installed, using other illuminants.

Daylight illumination.—There is no theoretical objection to the use of diffuse daylight so long as the illumination on the test types is adequate—i.e., does not fall below 3 foot candles. In cases of doubt it would be necessary to apply tests requiring the skilled use of some form of photometer. We are, therefore, of opinion that in order to secure uniformity and comparable results artificial illumination should in general be used, and invariably in testing for the public services.

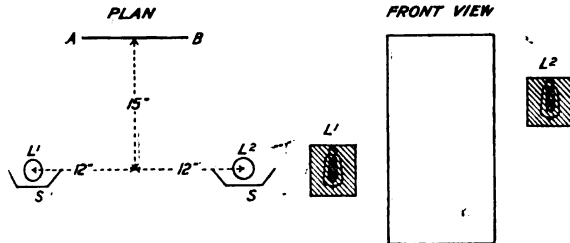


Diagram to illustrate the arrangement recommended to illuminate the test-card.

We therefore make the following recommendations.

I. **The test types.**—The test types shall be of the dimensions laid down by Snellen and printed on a matt white surface.

II. **Illumination.**—(a) The minimum illumination on the test-card shall be such that its brightness shall be equivalent to that of a new card illuminated to at least 3 foot candles. (b) The illumination of the test types shall be as uniform as possible. (c) Artificial illumination shall be used in preference to daylight. (d) The testing-room shall be moderately illuminated, and care shall be taken that there are no glaring lights or bright objects in the candidate's field of vision. (e) Extreme contrast between the illuminated test-card and the background shall be avoided.

III. **Method of lighting.**—(a) The method of lighting described in this report shall be in general adopted. (b) This method shall be made compulsory for sight testing in all public services.

As an appendix there is a note on the illumination of test types by gas or oil lamps.

Gas lighting.—Two "medium" inverted incandescent burners, consuming 2½–2½ cub. ft. of gas per hour, are fixed 2½ ft. in front of the test card, one on each side, at a horizontal distance of 12 inches from the vertical plane, normal to and bisecting the card. One burner should be higher than the other, one being opposite the junction of the upper and middle thirds of the card, the other opposite the junction of the middle and lower thirds. Burners should be equipped with clear glass globes, and care should be taken to ensure, by regular maintenance, that mantles and burners are kept in good order and in clean condition. Opaque non-reflecting screens are fitted so as to prevent direct light from the burners reaching the candidate's eyes.

Oil lighting.—Two standard "Duplex" oil lamps, each having a double straight wick, 1 inch in width, and a chimney 10½ inches in length, are fixed 2 ft. in front of the test card, one on each side, at a horizontal distance of 12 inches from the vertical plane, normal to and bisecting the card. One lamp should be higher than the other; one being opposite the junction of the upper and middle thirds of the card, the other opposite the junction of the middle and lower thirds. The wick should be turned up as high as is possible without smoking, and the face of the wick should be turned towards the card. The distance from top of wick to level of oil in reservoir should not exceed 5 inches. The lamp should be lighted 20 minutes before the test, so as to ensure steady conditions of burning. Opaque, non-reflecting screens are fitted, so as to prevent direct light from the lamps reaching the candidate's eyes.

The Council of British Ophthalmologists was founded in May, 1918, at a general meeting of all ophthalmic surgeons of the United Kingdom held at the Royal Society of Medicine. It was empowered to act in all matters of ophthalmological interest arising in connexion with public affairs and to be ready to provide when called upon a body of expert opinion to advise on any ophthalmic subject. The council, whose constitution has been given above, was founded on a basis which should ensure its authoritative character. The first report of the council, given above, will be seen to deal with an important subject—types used in testing the vision of candidates for public services. The regulations at present in existence with regard to the standard illumination of test types say that these tests shall take place in "ordinary daylight" (Army Regulations) or "in a good light, but not in direct sunlight" (Board of Trade Regulations for Mercantile Marine). In practice (as has been said above) this may mean anything, and a more definite standard was obviously required in the interests of the public and the candidates alike. The council was fortunate in securing valuable scientific co-operation in the preparation of its report. The suggestions are straightforward, and the object aimed at should be secured at very small cost.

MEDICAL CANDIDATURE FOR PARLIAMENT.

SUCCESSFUL AND UNSUCCESSFUL.

MEMBERS of the medical profession were candidates for Parliamentary suffrage in at least 32 constituencies in the British Isles during the recent General Election. From the results made public last Saturday, Dec. 28th, it will be seen that in more than a third of these contested elections they were successful. We append a complete list, so far as we know it, of the constituencies in which a medical man took part in the contest, giving in each case his position in the poll (in black figures), the total number of voters (in square brackets), and the number of votes secured by the medical man and his competitors, along with the political labels by which they were known. An asterisk is placed against the name of any medical man who sat in the last Parliament. Whether successful or not, the experience gained should be of use to others.

Universities.

Belfast (Queen's). SIR WILLIAM WHITLA (1).

1. (U.) 1487. 2. (S.F.) 118.

Dublin (2 seats). SIR ROBERT WOODS (2).

1. (U.) 1273. 2. (Ind.) 793. 3. (U.) 631. 4. (N.) 257.

London [10,133]. SIR WILMOT HERRINGHAM (4).

1. (Co.U.) 2810. 2. (Lab.) 2141. 3. (Teachers) 885.

4. (Ind.) 715. 5. (Ind.) 210.

Scotland (3 seats) [27,322]. *SIR WATSON CHEYNE (1). DR.

PETER MACDONALD (4). PROFESSOR W. R. SMITH (5).

1. (Co.U.) 3719. 2. (Co.L.) 3499. 3. (Co.U.) 3286. 4. (Lab.) 1581.

5. (Ind.) 850.

London District.

Battersea (South) [43,036]. *MR. ARTHUR A. LYNCH (2).

1. (Co.U.) 15,670. 2. (Lab.) 3383. 3. (L.) 2273. 4. (N.F.D.S.S.) 1657.

Bermondsey (West) [23,100]. DR. ALFRED SALTER (3).

1. (L.) 4260. 2. (Co.L.) 2998. 3. (Lab.) 1956. 4. (N.F.D.S.S.) 1294.

Shoreditch [45,686]. *DR. CHRISTOPHER ADDISON (1).

1. (Co.L.) 9532. 2. (Ind.) 3414. 3. (Lab.) 2072. 4. (L.) 1524.

5. (N.P.) 504.

Southwark (Central) [27,699]. DR. L. HADEN GUEST (2).

1. (Co.L.) 8060. 2. (Lab.) 3126.

Stepney (Whitechapel) [23,666]. DR. ROBERT AMBROSE (2).

1. (L.) 3025. 2. (Lab.) 2522. 3. (Co.U.) 2489. 4. (Posters) 614.

Willesden (West) [36,449]. DR. J. S. CRONE (3).

1. (Co.U.) 10,503. 2. (Lab.) 7217. 3. (L.) 1697.

County Boroughs.

Birmingham (Moseley) [41,546]. DR. R. DUNSTAN (2).

1. (Co.U.) 16,161. 2. (Lab.) 3789. 3. (L.) 3422.

Cheltenham [23,217]. DR. RICHARD DAVIES (2).

1. (Co.U.) 9602. 2. (Ind.) 6317.

Leeds (North) [37,904]. DR. A. C. FARQUHARSON (1).

1. (Co.L.) 13,863. 2. (Lab.) 3423. 3. (N.P.) 1282.

Liverpool (Wavertree) [31,262]. DR. NATHAN RAW (1).

1. (Co.U.) 11,326. 2. (Lab.) 5103. 3. (L.) 2484.

Morpeth [39,773]. MR. G. D. NEWTON (4), DR. T. M. ALLISON (5).

1. (Lab.) 7677. 2. (Co.L.) 7140. 3. (U.) 4320. 4. (N.F.D.S.S.) 2729. 5. (N.D.P.) 511.

Wallasey [42,174]. DR. B. F. P. McDONALD (1).

1. (Co.U.) 14,633. 2. (Lab.) 4384. 3. (L.) 4055. 4. (N.F.D.S.S.) 3407.

Wolverhampton (Bilston) [28,504]. MR. J. Y. KYNASTON (2).

1. (Co.U.) 10,343. 2. (Lab.) 6744.

Counties: Great Britain.

Carmarthen: Llanelly [44,657]. DR. J. H. WILLIAMS (2).

1. (Co.L.) 16,344. 2. (Lab.) 14,409.

Derby: High Peak [33,075]. DR. CLIFFORD BROOKES (2).

1. (Co.U.) 12,118. 2. (L.) 8504.

Durham: Bishop Auckland [32,689]. DR. V. H. RUTHERFORD (3).

1. (Lab.) 10,060. 2. (Co.L.) 7417. 3. (L.) 2411.

Glamorgan: Llandaff and Barry [34,041]. MR. C. F. G. SIXSMITH (3).

1. (Co.U.) 13,307. 2. (Lab.) 6607. 3. (Ind.) 1539.

Hants: Basingstoke [31,687]. *SIR AUCKLAND GEDDES (1).

1. (Co.U.) 11,218. 2. (Lab.) 6277.

Inverness: Western Isles [18,237]. DR. DONALD MURRAY (1).

1. (L.) 3765. 2. (Co.L.) 3575. 3. (Highland Land League) 809.

Lanark: Lanark [27,431]. DR. W. E. ELLIOT (1).

1. (Co.U.) 12,976. 2. (Lab.) 5821.

¹ Increased by P.R. at the second count to 1094.

Lancs: Farnworth [34,160]. SIR THOS. FLITCROFT (3).

1. (U.) 10,237. 2. (Lab.) 9740. 3. (L.) 3893.

Lindsey: Gainsborough [27,503]. DR. J. E. MOLSON (1).

1. (Co.U.) 8634. 2. (L.) 6556.

Notts: Mansfield [39,041]. MR. N. M. TARACHAND (4).

1. (Lab.) 8957. 2. (Co.N.D.P.) 6678. 3. (L.) 4000.

4. (Ind.) 878.

Stirling: Clackmannan and Eastern [31,910]. *DR. W. A. CHAPPLE (3).

1. (Co.U.) 6771. 2. (Co-op.) 5753. 3. (L.) 5040.

Counties: Ireland.

Mayo: North [20,212]. MR. JOHN CROWLEY (1).

1. (S.F.) 7429. 2. (N.) 1861.

Meath: North [14,716]. MR. P. J. CUSACK (2).

1. (S.F.) 6982. 2. (N.) 3758.

Wexford: South [23,168]. DR. JAMES RYAN (1).

1. (S.F.) 8729. 2. (N.) 8211.

The names of the medical men entitled to sit for the first time in the House of Commons on Jan. 21st next are therefore:—

| | |
|------------------------|---------------------|
| MR. JOHN CROWLEY, | DR. DONALD MURRAY, |
| DR. W. E. ELLIOT, | DR. NATHAN RAW, |
| DR. A. C. FARQUHARSON, | DR. JAMES RYAN, |
| DR. B. F. P. McDONALD, | SIR WILLIAM WHITLA, |
| DR. J. E. MOLSON, | SIR ROBERT WOODS, |

along with three others who have already established their position there:—

DR. CHRISTOPHER ADDISON, SIR WATSON CHEYNE,
SIR AUCKLAND GEDDES.

On behalf of several of these successful candidates we have been asked to express gratitude to their professional colleagues for help freely rendered.

MEDICINE AND THE LAW.

Illicit Traffic in Drugs.

THE inquest, which has not yet been concluded, upon the body of a young actress named Stewart and known upon the stage as "Billie Carleton" has already produced as one of its results the prosecution and conviction of two persons—Len Ping You, a Chinaman, and his wife Ada, a British subject by birth. They were mentioned in the early stages of the inquest upon Miss Stewart, with allegations as to the wife having assisted the deceased and others in the smoking of opium, and owing to the facts thus disclosed they were recently charged simultaneously at two different police-courts. The Chinese husband was arrested at Limehouse Causeway, where he lived, and brought before Mr. Rooth at the Thames police-court, who sentenced him to pay a fine of £10 for having opium in his possession without authority, and also for having an opium pipe and other utensils connected with this use of the drug, the offence, to which he pleaded guilty, being one against a regulation made under the Defence of the Realm Act. The wife, Ada, was brought before Mr. Mead, at Marlborough-street, and charged with supplying opium prepared for smoking to Miss Stewart, and also with being in possession of prepared opium at 16, Dover-street, where rooms were occupied by a man named De Veuille and his wife. To the latter charge she pleaded guilty, having denied supplying the opium at the time of her arrest and afterwards. The facts narrated by the solicitor for the prosecution as to the use which the prisoner made of a drug, which possibly, if she told the truth, she found already provided on the premises, were of a character to earn for her a sentence of five months' imprisonment with hard labour. Acting as a "priestess of unholy rites," to adopt the phrase of Mr. Mead, the magistrate, she filled and lit the opium pipe which passed from mouth to mouth in an opium-smoking debauch lasting from 10 o'clock one Saturday evening until 3 o'clock on the following afternoon. The party to whom she thus ministered consisted of five or six young men and women, for whom cushions were spread upon the floor, and who before taking part removed their clothes and put on pyjamas and night-dresses respectively. Miss Stewart, who arrived late after a performance at the theatre where she was engaged, was one of these. The observations made by the magistrate upon what he characterised as a disgraceful orgy, and the sentence which he passed upon the woman who took so leading a part in promoting it, can hardly be criticised as too severe. It is to be noted also that he described

indulgence in opium as a prevalent form of vice, and expressed the hope that the imprisonment which he was ordering the prisoner to undergo would act as a warning to others. The frequency of prosecutions for this kind of offence recently to be observed in police reports may to some extent be due to there being more space than formerly for the publication of such items of news, but whether this is so or not it is evident that the use of opium, cocaine, and other drugs in late years has attained substantial proportions, in spite of the efforts made by the authorities under the Defence of the Realm Act to hinder the illicit traffic. It is to be hoped that whenever that statute may become obsolete permanent provision will be made to protect the willing victims of drug-taking from themselves and from the temptations placed in their way by others. The use of cocaine by soldiers, to prevent which a special effort has been made through the regulations under "D.O.R.A.," is said to be due to an alleged effect of the drug in producing a reckless indifference to environment and disregard of danger. The circumstances of war service have ceased, but the desire for temporary relief from anxiety or discomfort will contribute even now to render men and women anxious to obtain drugs, the surreptitious importation and sale of which it is very difficult to prevent. Among typical recent cases we note one of a Chinese cook caught with two pounds of opium, which he might have sold for anything up to £60, under his shirt. He was fined £22 at Tower Bridge police-court, and another Chinaman was charged on the same day at the Thames police-court for keeping an opium den at Limehouse and fined £10. Cocaine is even more easily carried and concealed than opium, and perhaps on this account and for the reasons above suggested commends itself to many drug-takers, who, however, do not appear at once to adopt a particular form of intoxication, but prefer to experiment for a time with whatever opportunity may throw in their way. This, at least, is the impression conveyed by the reports of the inquest upon Miss Stewart and the other cases which have arisen out of it. In connexion with the use of cocaine we call attention to the conviction at Liverpool of a woman for stealing a bottle of cocaine from the consulting room of a dentist who was treating her. This should be a warning to medical men who dispense their own medicines of the great importance of keeping all dangerous drugs beyond the reach of their patients.

An Ingenious Impersonator.

At the Bromley (Kent) police-court recently a man named James Allan was ordered to pay a fine of £20 and £10 costs after being proved to have used medical titles and practised as a medical man in somewhat unusual circumstances. The name of a Mr. James Allan, who had duly qualified at Edinburgh University, appeared with the usual particulars of his qualifications in the Medical Register from 1892 to 1898, when he died. In 1901 there were published in the "Medical Directory" the same name and qualifications, "James Allan, M.B., C.M. Edinburgh," and they continued so to appear until the conferring of the order of Officer of the British Empire upon a gentleman so described attracted the attention of the Registrar of the General Medical Council, who was unable to find a corresponding entry in the Medical Register. At or about the same time one of the usual forms issued for the purpose of corrections or additions by the publishers of the Medical Directory was sent to Mr. James Allan at his address at Chislehurst, and was returned by him with the addition of the letters O.B.E. After inquiries had been made by the Registrar of the General Medical Council, the matter was laid before the Director of Public Prosecutions with the above result. The defendant was stated by counsel to be the son of a farmer in Ireland, who had been at one time a shop assistant and had afterwards studied medicine. He had not qualified as a medical practitioner, but had acted as an unqualified assistant to medical men, and since 1902 had practised at Chislehurst as James Allan, M.B., C.M. Edin., and in that capacity had signed death certificates. A charge made in respect of these was not proceeded with by the prosecution. A detail which was mentioned in the case should be noted by the personal representatives of medical men. After the death of the real James Allan, referred to above, his sister was asked by someone who wrote from Glasgow and was stated to be an acquaintance of the defendant, whether she would sell her brother's medical diplomas, the

writer stating that he had a hobby for collecting such documents. The object of the offer, in so far as it proceeded from the defendant, is obvious, and as the diplomas of deceased medical men cannot, except perhaps in the case of a few distinguished personages, be of any interest except to their children or other relatives, willingness to pay for them on the part of a stranger should at once excite suspicion on the part of the possessor. James Allan, of Chislehurst, cannot complain that the punishment inflicted upon him was in excess of his deserts, in spite of the fact that witnesses, including the rector of Chislehurst, expressed themselves satisfied with the skill with which he treated his patients. This was a bad case of impersonation, and if the prosecution had laid stress upon the points involved the proceedings could hardly have stopped where they did. We feel sure that those responsible for so carefully edited a work as the Medical Directory must keenly regret the inaccuracy which in some way was admitted to its pages.

Frost v. King Edward VII. National Memorial Association for the Prevention, Treatment, and Abolition of Tuberculosis.

In this action, in which Mr. Justice Eve granted in last May an injunction to restrain the defendants from using Cardigan House, at Newport, Monmouthshire, as a hospital for surgical tuberculosis, a settlement has been arrived at. This was announced by counsel when the case was called in the Court of Appeal, the terms being stated to be that the house should continue to be used as before until the expiration of six months after peace, and then should become a residence for one of the physicians of the association and a central dispensary for their work in Newport and Monmouthshire. Conditions were added such as should make the settlement a binding one and prevent any further litigation in the future, and it was provided that the defendants should pay the taxed costs of the plaintiff.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Committee was held at THE LANCET Offices on Dec. 23rd, 1918, when Dr. SQUIRE SPRIGGE reported that he had received through Lord Hardinge the necessary forms to secure a passport for a representative of the Fund to go to Belgium, the only preliminary formality being the favourable recommendation of the Belgian Control Office. Dr. Sprigge also reported a visit from Dr. Théo Huyberechts, who had come as a member of the Belgian Doctors' and Pharmacists' Committee sitting in Brussels, to express the gratitude of that Committee to the Fund, testifying that the help of the Fund had been "beyond words valuable."

Sir RICKMAN GODLEE called the attention of the Committee to the fact that there remained at their disposal many instruments still housed at the Apothecaries' Hall. One selection, he said, had been packed and sent, under the superintendence of Mr. Samuel Osborn, to a Belgian hospital at Bruges, but many more, and some of very good workmanship, remained. Mostly they were old-fashioned but of excellent steel and make. He instanced some knives by famous makers, and thought that metal might be substituted for the wooden handles, when they would be serviceable instruments to-day.

An article published in *Le Belge Indépendant* was received by the Committee describing the establishment of the dispensary in Aldwych for the Belgian refugees at the opening of the war and the foundation of La Société Belge de Médecine en Angleterre. Dr. Clément Philippe, with the assistance of Dr. J. H. Philpot and Dr. H. A. Philpot, organised the former movement, and for some time the Drs. Philpot and Dr. Des Vœux, with the assistance of certain refugee Belgian doctors, carried on very useful work. It may be remembered that this work was afterwards transferred to the Metropolitan Asylums Board, and now that the Belgian doctors are returning to their homes the Board will continue its supervision over the remaining patients. The article also described the preliminary circumstances which led to the establishment of the Belgian Doctors' and Pharmacists' Relief Fund. This Fund came into being upon representations made, by Dr. Charles Jacobs mainly, to the Editors of THE LANCET and the *British*

Medical Journal, and the article in *Le Belge Indépendant* bears witness to the generosity of the members of the British professions, by whom some £25,000 has been subscribed, the bulk of which has been expended on Belgian sufferers in Belgium.

As just sufficient money remained in hand it was decided to send to Belgium the full mensuality of £800 for next month.

The following subscriptions have been received:—

| | £ | s. | d. |
|---|-----|----|----|
| Dr. Alfred Cox (monthly) | 1 | 1 | 0 |
| Lt.-Col. Fremantle, R.A.M.C. | 10 | 0 | 0 |
| American Red Cross Commission for Belgium (monthly) ... | 200 | 0 | 0 |
| Dr. D. Douglas-Crawford | 5 | 5 | 0 |

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

Diet Kitchens for Military Hospitals.

AN interesting experiment in the organisation of diet kitchens has been made during the last two years in French military hospitals. Begun in a tentative way to meet an obvious need in one of those hastily improvised establishments dotted about the provinces in the early days of the war, the experiment has now crystallised into a definite work of undoubted importance in the caring for the sick and wounded, and will possibly form the basis of a radical change in the dietary treatment of hospital patients throughout France.

Even before the war the food given to the patients in French civilian hospitals was bad enough to justify the writer of a Paris guide-book in stating that "the catering is the worst possible. patients being fed almost exclusively on a beef diet with vegetables, mostly of the dried order, beef being given three times a day in the form of soup once and boiled beef twice." The war naturally aggravated these conditions, and in many of the hurriedly organised military hospitals the cooking was entrusted to unskilled people whose knowledge of catering for large numbers of wounded was sadly deficient.

The initial difficulties of this new phase of hospital administration were hard to overcome, but a reform movement was supported by General Rouget, the Director-General of the Service de Santé, Dr. Mourier, the under-secretary, Mr. Joseph Reinach, and many highly-placed persons, and the scheme from a small beginning is now assuming a definite importance. One difficulty lay in the fact that the cooks in military hospitals are nearly always soldiers; and in France a soldier is theoretically supposed to be master of all trades, and credited with a superhuman versatility, while his military duties come before all others. A woodcutter or a bricklayer may be detailed to do the cooking for several hundred men, and when he gained a working knowledge of the job he may be moved to the other side of France for purely military reasons to attend the stoking of furnaces in a dépôt. It was realised that while the food supply was quite adequate, everything was spoiled by this use of unskilled labour, and that the only remedy lay in the appointment of specially trained cooks working under a surveillante.

Early in January, 1917, Miss M. Oliver, daughter of the late Dr. George Oliver, received permission from the French Service de Santé to open the first diet kitchen of the "Service des Régimes" at Hospital No. 75 at Vichy. Two ladies took charge of the cooking with some voluntary help in the distribution. The hospital was the medical centre of the 13th Region, and offered a good deal of variety in the clinical work, so the workers gained much experience in satisfying the individual needs of each case. The work was carried on till the following July, when the hospital was taken over by the Americans. By May the Government authorisation had been gained for starting a diet kitchen at the Villemin Hospital in the rue des Récollets, Paris. At that time there were there about 500 beds. The majority of the cases were tuberculous, and the diet kitchen was opened for these and for two wards of abdominal cases.

Two months later a diet kitchen was started by two lady workers in the Val-de-Grâce Hospital, the oldest and biggest military hospital in France, principally to provide additional purées and soups for Dr. Morestin's famous surgical division of wounded in head, jaw, and throat. As

these men can only be fed through tubes, it is particularly necessary that attention should be paid to the assimilative qualities and to the nutritive value of the food. The success of this experiment was so marked that in November the work was enlarged so as to include the whole hospital: a large refectory was turned over to the Service des Régimes, as the diet kitchens are called, and fitted up by the hospital authorities with a range, two gas stoves, and every up-to-date contrivance for a model kitchen. The whole of the 14 divisions of this great hospital, as well as the annexe containing another large division of head, jaw, and throat cases, is now provided with special diet, when necessary, by the diet kitchen.

The next experiment was made at Epernay, where a diet kitchen was opened on Jan. 1st, 1918, in the principal bone fracture hospital in France. Unluckily, the German offensive in June put a stop to the excellent results obtained by the extra nourishment given through the diet kitchen, for the entire hospital had to be evacuated to a field ambulance far behind the lines—the kitchen was trampled down and the outfit scattered. The hospital will, however, soon go back to its old quarters when the diet kitchen will be re-established. A fifth diet kitchen was opened in the Le Vénet Hospital, near Paris, on July 1st, 1918, where the work done in providing gassed patients with suitable nourishment has saved many lives. Diet kitchens have also been well started in St. Jacques Hospital, at Besançon, and in the military hospitals at Troyes and Reims. The working of the diet kitchens in each case is practically identical. The directress of the work goes round the wards and notes the diet cards filled in by the doctor, and measures out the quantity of food required by each case. The cooking is done by paid workers under the supervision of the directress. The regular hospital fire is provided by the authorities, but the expense of the special diet is covered by Miss Oliver's "Service des Régimes," which also pays the salaries of the workers.

The excellent results shown since the establishment of these kitchens have evoked unrestricted appreciation from the doctors in charge of the hospitals, as well as of the heads of the French Service de Santé. The success is so notable that Miss Oliver is now hoping to develop her work so as to provide every hospital in France with a Service des Régimes. The only difficulty is the lack of funds. Once this is overcome, and each hospital has its special diet kitchen, Miss Oliver wants to coöperate with the "Service de Santé" in the formation of a "Service de Cuisine," where women cooks and women inspectors might be trained to specialise in hospital cookery.

French authorities, with a fine defiance of Voltaire, have welcomed this practical aid, and the endowment of every military hospital with a properly organised "Service de Cuisine" will form one more link in the friendship between England and France.

Medical Demobilisation in France.

Dr. Mourier, Under Secretary of State for the Service de Santé, has already made some progress with demobilising his own department. Red Cross hospitals have been dealt with first, and in Paris alone eight closed their doors last week. A knotty point is the allocation of the enormous accumulation of surgical material. As regards beds and furniture, the proposal is to devote them to help rehabilitate the devastated communes in the north of France. Medical officers themselves belonging to the earliest classes will be demobilised at once and replaced by more recent classes, who will as far as possible be detailed to their own districts, where they can get in touch with their practices. On demobilisation pay will be continued for some little time. Those who desire to remain will be retained in the services, as well as a certain number of indispensables. In Paris the larger proportion of consultants attached to military hospitals have asked to continue their work.

Influenza in France.

Influenza, which seemed to be dying out, has had a new lease of life the last three weeks with the prolongation of the warm moist weather. The number of severe and fatal cases has, however, been much smaller than two months ago. Disinfection leaves much to be desired on account of shortness of sanitary staff. A wealth of new suggestions for treatment have been made to the Academy of Medicine and other learned societies. M. Armand Gautier has advised the

injection of quinine and arnéual dissolved in normal saline. M. Albert Robin has obtained excellent results with this remedy. M. Sou de Rouville and M. Netter have used inoculations of oxide of tin in colloidal suspension. They have had success in certain desperate cases, observing that the inoculations have produced the maturing of fixation abscesses, provoked by turpentine injection after the method of Fochier, in cases in which such injections had evoked no reaction—a condition tantamount to a fatal prognosis. Finally, MM. Grigant and Moutier have employed injections of blood serum from patients convalescent of influenza, obtaining remarkable results when the injections were given practically from the onset of the fever.

Maternal and Infantile Protection in Paris during the War.

A central office was set up in Paris at the outset of the war to assure protection for necessitous mothers and infants in Paris and its neighbourhood in intimate relation with all the maternities and with every local authority. M. Pinard recently reported to the Academy on the work done by this central office. More than 100,000 mothers and babies have received assistance during the last four years. In the last year of all 31,262 mothers claimed help before, during, or after their confinement, a large proportion of the 34,125 births registered in Paris. Australia's contribution to the work has been invaluable. From Dec. 18th, 1915, to June 22nd, 1918, the Franco-Australian League at Sydney remitted to Mme. Michel, honorary president of the work, a sum of more than 150,000 fr., and the same League at Melbourne a total of 550,000 fr., for which M. Pinard in his report tenders the warmest thanks. Mortality in Paris during the first year of post-natal life has sensibly diminished in the last 12 months; from 155 per 1000 births in 1914 the figure has fallen to 140, or less than what it was before the war. Deaths due to enteritis fell from 1363 in 1914 to 762 in 1918, a result attributed to the increase of breast-feeding and to the special cow's milk reserved by the Government for hand-fed infants. Congenital debility has, alas, increased as a cause of early death in the last two years. This mortality stands in close relation to the exhaustion of the mothers by arduous work, a condition which did not exist in the first year of the war.

French Doctors and the Excess Profits Tax.

A considerable levy has been made on war profits in all professions. The Association of Medical Societies of France has recently held a reunion at which the unanimous demand was made for the exemption of the medical corps from the tax. Except in the rarest cases the medical profession has, it is alleged, during the war only made paltry profits, since the overwhelming proportion has been mobilised and of the remainder most have given much of their time gratuitously to Red Cross work. The question has been submitted to the highest financial authority, but should its decision be unfavourable to the doctors the Association has decided to memorialise the Council of State, asking that the basis of fiscal control should be the medical man's ledger, the production of which is now contrary to the law of professional secrecy.

Dec. 28th, 1918.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Influenza Scourge.

COMMENCING in late September, Canada has passed through a terrible epidemic of influenza. It is yet impossible to give any figures for the whole country, but the deaths in Toronto reached as high as 150 on one day. In Canada the disease has not been made reportable or notifiable and no quarantine has been practised, but isolation has been put into force to some extent by private practitioners and in hospitals. Toronto grappled with the epidemic by rapidly preparing two emergency hospitals, one of which has not been used. Toronto's health officer claims that that city reached the crest of the epidemic much earlier than other Canadian and American cities. Some physicians used a prophylactic vaccine and speak well of it, and the Ontario Board of Health participated in the making of such vaccine. That board discussed reporting, isolation, and quarantine in regard to influenza before the epidemic invaded the

province, but concluded that these measures were impracticable. There was much disruption of business and educational life, but, speaking generally, each municipality was left to its own resources in fighting the disease. Evidence is strong that the mass of the people still cling to alcohol in the treatment of influenza. In Prince Edward Island clergymen were empowered to write prescriptions for alcoholic liquors, and temperance laws were in general more plastic than at other times. In Toronto there are two licensed vendors of liquors under the Ontario Temperance Act, and the long lines of waiting citizens testified to the number of prescriptions written by physicians. The Montreal Board of Health had prepared a circular advising the public to take to bed and send for the physician at the first sign of the disease. In regard to vaccines, the public was informed that the treatment was still in an experimental stage, and that no body of medical opinion was prepared to endorse their use as a prophylactic measure. The opinion has been widely expressed that the epidemic of influenza "has taken a terrible fall out of" preventive medicine. It is scarcely understandable how medical officers simply waited for the inevitable.

Some Mental Statistics in Canada.

6931 patients were in the hospitals for insane in Ontario in one recent year, which would make in proportion 20,000 for all of Canada. Represented in money this would be an economic loss to Canada annually of more than \$16,300,000. While the exact numbers of the feeble-minded in Canada have not at any time been determined, in certain centres they have been, for in Toronto, with a population of more than 500,000, 2500 cases have been discovered; and figuring on this basis, approximately there are 36,000 mental defectives in the Dominion. The late Dr. Gilmour, parole officer for Ontario, estimated that 33 per cent. of prisoners in Ontario institutions were mentally abnormal. The Toronto General Hospital psychiatric clinic, in three years, had 1300 mental defectives referred to it by the juvenile court of that city. Thus, about 40 per cent. of the total number of children found guilty of repeated offences against the law are defective delinquents. Take prostitution at the venereal clinic in the same institution—between 50 and 75 per cent. of all the loose women are mentally defective. In one institution of the city that cares for girls of weak moral nature 90 per cent. of one hundred odd cases examined were of the feeble-minded order. Of 10,000 school children examined by Dr. Hincks, psychiatrist of the Board of Health, 2 per cent. were feeble-minded, and 100 of these were guilty of evil sexual practices.

Canadian Association for the Prevention of Tuberculosis: The Eighteenth Annual Report.

The secretary of this association (Dr. George D. Porter, Toronto) reports that nine years ago there were just six institutions in Canada for the care and treatment of the tuberculous. There was only one institution of this character west of Hamilton, Ontario, to the Pacific coast—in British Columbia—with 16 beds. Now there are ten institutions west of Hamilton, and a proportionate growth east of that city to Halifax and Prince Edward Island. The total accommodation throughout Canada nine years ago was about 350 beds; to-day it is about 3500. The association has abundantly justified its existence. The money spent in maintenance was about \$150,000 per annum; to-day it totals over \$900,000 per annum. Some \$3,000,000 have been spent in plants. The National Sanatorium Association was the pioneer organisation, and some interesting figures are given of it below. It has the largest number of patients. The first provincial sanatorium was established in Nova Scotia; and at Hamilton, Ontario, was erected the first local or county institution in all Canada.

The National Sanatorium Association.

The following institutions are controlled by this association: Muskoka Free Hospital for Consumptives, Muskoka Cottage Sanatorium (both near Gravenhurst, Ontario),¹ Toronto Free Hospital for Consumptives, King Edward Sanatorium for Consumptives, Queen Mary Hospital for Consumptive Children, Free Dispensary-Gage Institute, Toronto, the Sanatorium Club, the Weston Sanatorium Club. It has been a serious problem to manage all these institutions during the war period, owing to the advanced prices of foods

and the shortage of trained nurses. Four years ago, at the beginning of the war, the daily average number of patients in residence was 485, now it is 688. The annual expenditure advanced in that time from \$275,000 to \$510,000; a conservative estimate for the present year's requirements is \$585,000. The per capita cost of maintenance in the Muskoka and Weston institutions advanced from \$10.50 to \$14.52 per week. For the present year \$55,000 has been received from appeals to the public, and for the past hospital year the expenditure for maintenance exceeded the income by \$52,000. The doors of these institutions are open to residents of the province of Ontario, and during the past hospital year they have cared for 1707 patients, making a total of 11,679 cared for in all the hospitals since establishment.

Tuberculosis Toll in Canada.

Almost as many people died in Canada of tuberculosis during the four years and three months of war as there were Canadian soldiers killed in battle in the same period. It is also claimed that as many civilians at home were stricken with the disease as the number of soldiers who went overseas. Dr. Harding, the secretary of the Royal Edward Institute, Montreal, has made this statement. During the past hospital year of that institution 11,000 patients had consulted the dispensary, and there had been 1063 new patients, of whom 391 were found on examination to be tuberculous. Two hundred and forty soldiers had been treated in the military annexe, preparatory to being sent to Ste. Agathe Sanatorium. Some of these were advanced and hopeless cases, and 21 of them had died of the disease.

New Military College.

The National Cash Register Building in Toronto, which was purchased by the Canadian Government a short time ago for an orthopaedic hospital, will probably be opened early in 1919. It is to be the centre for orthopaedic work in Canada and will also be used for teaching clinical orthopaedics. It is to accommodate from 1500 to 2000 and is equipped with all modern apparatus. The hospital will have an assembly hall to accommodate 850.

Toronto, Dec. 20th, 1918.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING NOVEMBER, 1918.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4.0 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 3.2, 4.7, and 5.9 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in St. Marylebone, Hampstead, the City of London, and Greenwich; and the highest rates in Bethnal Green, Poplar, and Southwark. The prevalence of scarlet fever was 29 per cent. lower than in the preceding month; this disease was proportionately most prevalent in Bethnal Green, Poplar, Southwark, Bermondsey, and Lambeth. The Metropolitan Asylums Hospitals contained 1107 scarlet fever patients at the end of the month, against 690, 931, and 1184 at the end of the three preceding months; the weekly admissions averaged 146, against 101, 164, and 178 in the three preceding months. The prevalence of diphtheria was 32 per cent. lower than in October; the greatest prevalence of this disease was recorded in Stoke Newington, Hackney, Stepney, Poplar, and Southwark. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 886, 1051, and 1155 at the end of the three preceding months, had declined to 1000 at the end of November; the weekly admissions averaged 129, against 107, 166, and 169 in the three preceding months. The prevalence of enteric fever declined 60 per cent. compared with the previous month; of the 16 cases notified 4 belonged to the City of Westminster, 3 to Fulham, and 2 each to Greenwich and Woolwich. There were 33 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 32, 43, and 56 at the end of the three preceding months; the weekly admissions averaged 3, against 6, 6, and 9 in the three preceding months. Erysipelas was proportionately most prevalent in St. Pancras, Shoreditch, Bethnal Green, Poplar, and Bermondsey. Of the 5 cases of puerperal fever notified during the month 2 belonged to Lambeth: 4 cases of cerebro-spinal meningitis were notified from Islington; and 1 of poliomyelitis from Poplar.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended Nov. 30th the deaths of 13,061 London residents were registered, equal to an annual rate of 42.3 per 1000; in the three preceding months the rates had been 10.1, 11.4, and 27.3 per 1000. The death-rates ranged from 27.7 in Hampstead, 28.5 in Lewisham, 28.9 in Stoke Newington, and 30.8 in Woolwich to 50.0 in Poplar, 51.7 in Southwark, 53.4 in Bermondsey, 56.5 in Finsbury, and 62.0 in Holborn. The 13,061 deaths from all causes included 211 which were referred to the

¹ THE LANCET, 1910, II., 1041.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING NOVEMBER, 1918.
(Specially compiled for THE LANCET.)

| CITIES AND BOROUGHES. | Estimated civil population, 1917. | Notified Cases of Infectious Disease. | | | | | | | | | | | Deaths from Principal Infectious Diseases. | | | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. |
|---------------------------|--------------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|------------------------------|---------------------|-------------|-------------------------------|----------------|--------|---|------------|----------|----------------|--------------|---------------------|----------------|--|--------|---|-------|----------------------------|-----------------------------------|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other con- tinued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping- cough. | Enteric fever. | Diarrhoea and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | | | |
| LONDON... .. | 4,026,901 | — | 588 | 506 | — | 16 | — | 5 | 134 | 11 | 1 | 1261 | 4.0 | — | 38 | 15 | 66 | 17 | 5 | 70 | 211 | 0.7 | 13051 | 42.3 | |
| <i>West Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 122,507 | — | 20 | 18 | — | — | — | — | 3 | — | — | 41 | 4.4 | — | 1 | — | — | — | — | — | 1 | 0.1 | 376 | 40.0 | |
| Kensington | 151,535 | — | 21 | 9 | — | 1 | — | — | 2 | 1 | — | 34 | 2.9 | — | 3 | 1 | — | — | — | 2 | 10 | 0.9 | 527 | 45.3 | |
| Hammersmith | 114,952 | — | 9 | 14 | — | — | — | — | 1 | — | — | 25 | 2.8 | — | — | — | — | — | — | 12 | 1.4 | 361 | 40.9 | | |
| Fulham | 145,186 | — | 24 | 26 | — | 3 | — | — | 1 | 5 | 1 | 60 | 5.4 | — | — | — | — | — | 2 | 6 | 0.5 | 545 | 48.9 | | |
| Chelsea | 57,368 | — | 4 | 8 | — | — | — | — | — | — | — | 12 | 2.7 | — | 2 | — | 1 | — | — | 3 | 0.7 | 219 | 39.8 | | |
| City of Westminster | 122,046 | — | 11 | 5 | — | 4 | — | — | 3 | — | — | 23 | 2.5 | — | — | — | — | — | 1 | 1 | 0.1 | 350 | 37.4 | | |
| <i>North Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 92,796 | — | 4 | 9 | — | — | — | — | 3 | — | — | 16 | 2.2 | — | 4 | — | 2 | — | — | 7 | 13 | 1.8 | 312 | 43.8 | |
| Hampstead | 75,649 | — | 6 | 2 | — | — | — | — | 1 | — | — | 9 | 1.6 | — | — | — | — | — | — | — | — | — | 161 | 27.7 | |
| St. Pancras | 186,600 | — | 26 | 25 | — | 1 | — | — | 12 | — | — | 64 | 4.5 | — | 8 | 1 | 3 | — | — | 2 | 14 | 1.0 | 617 | 43.1 | |
| Islington | 297,102 | — | 32 | 28 | — | — | — | — | 10 | 4 | — | 74 | 3.2 | — | — | — | — | — | 11 | 13 | 0.6 | 923 | 40.5 | | |
| Stoke Newington... | 47,426 | — | 5 | 11 | — | — | — | — | — | — | — | 16 | 4.4 | — | — | — | 3 | — | — | 3 | 0.8 | 105 | 28.9 | | |
| Hackney | 196,598 | — | 31 | 39 | — | 1 | — | — | 11 | — | — | 82 | 5.4 | — | 2 | 7 | 2 | — | — | 2 | 13 | 0.9 | 596 | 39.5 | |
| <i>Central Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 35,303 | — | — | 6 | — | — | — | — | 1 | — | — | 7 | 2.6 | — | — | — | 1 | — | — | 2 | 3 | 1.1 | 168 | 62.0 | |
| Finsbury | 68,011 | — | 10 | 5 | — | — | — | — | 2 | 1 | — | 18 | 3.5 | — | — | — | — | — | — | 2 | 2 | 0.4 | 295 | 56.5 | |
| City of London | 16,138 | — | — | 2 | — | — | — | — | 1 | — | — | 3 | 2.4 | — | — | — | — | — | — | 1 | 1 | 0.8 | 39 | 31.5 | |
| <i>East Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 89,675 | — | 16 | 6 | — | 1 | — | — | 6 | — | — | 29 | 4.2 | — | 1 | — | 1 | — | — | 3 | 5 | 0.7 | 331 | 48.1 | |
| Bethnal Green | 107,362 | — | 52 | 13 | — | — | — | — | 10 | — | — | 75 | 9.1 | — | 1 | 1 | 3 | 1 | — | 4 | 9 | 1.1 | 398 | 48.3 | |
| Stepney | 232,010 | — | 36 | 47 | — | — | — | — | 7 | 1 | — | 91 | 5.1 | — | 1 | — | 3 | 2 | — | 7 | 13 | 0.7 | 865 | 48.1 | |
| Poplar | 143,443 | — | 31 | 29 | — | — | — | — | 9 | — | 1 | 70 | 6.4 | — | — | 1 | 6 | — | — | 2 | 9 | 0.8 | 550 | 50.0 | |
| <i>South Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 167,936 | — | 66 | 39 | — | — | — | — | 1 | 10 | — | 116 | 9.0 | — | — | 3 | 5 | — | — | 2 | 10 | 0.8 | 666 | 51.7 | |
| Bermondsey | 107,635 | — | 20 | 17 | — | — | — | — | 8 | — | — | 45 | 5.4 | — | 1 | — | — | — | — | 1 | 4 | 0.5 | 441 | 53.4 | |
| Lambeth | 272,038 | — | 58 | 27 | — | — | — | — | 2 | 6 | 1 | 94 | 4.5 | — | 1 | 3 | 8 | 2 | 1 | 2 | 17 | 0.8 | 873 | 41.8 | |
| Battersea | 150,023 | — | 19 | 10 | — | — | — | — | 3 | — | — | 32 | 2.8 | — | 1 | 1 | 3 | — | — | 3 | 8 | 0.7 | 487 | 42.3 | |
| Wandsworth | 300,787 | — | 25 | 28 | — | — | — | — | 4 | — | — | 57 | 2.5 | — | 1 | 1 | 3 | 1 | — | 3 | 9 | 0.4 | 783 | 33.9 | |
| Camberwell | 239,461 | — | 20 | 36 | — | 1 | — | — | 1 | 10 | — | 68 | 3.7 | — | 4 | — | 4 | 1 | — | 3 | 12 | 0.7 | 798 | 43.4 | |
| Deptford | 103,527 | — | 11 | 12 | — | — | — | — | 2 | — | — | 25 | 3.1 | — | — | — | 1 | — | — | 1 | 2 | 0.3 | 331 | 41.7 | |
| Greenwich | 90,440 | — | 6 | 5 | — | 2 | — | — | — | — | — | 13 | 1.9 | — | 1 | — | 1 | — | — | 2 | 4 | 0.6 | 279 | 40.2 | |
| Lewisham | 161,405 | — | 15 | 15 | — | — | — | — | 2 | 1 | — | 33 | 2.7 | — | 1 | — | 2 | 1 | 1 | 5 | 0.4 | 353 | 28.5 | | |
| Woolwich... .. | 131,942 | — | 10 | 15 | — | 2 | — | — | 2 | — | — | 29 | 2.9 | — | 1 | — | 2 | — | — | 5 | 9 | 0.9 | 312 | 30.8 | |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |

* Including membranous croup.

principal infectious diseases, and comprised 70 from infantile diarrhoea, 66 from diphtheria, 38 from measles, 17 from whooping-cough, 15 from scarlet fever, and 5 from enteric fever. No death from any of these diseases was recorded in Hampstead and only one in Paddington, in the City of Westminster, and in the City of London; the highest rates were recorded in Hammersmith, St. Marylebone, St. Pancras, Holborn, and Bethnal Green. The 38 deaths from measles were 43 below the average number in the corresponding period of the five preceding years, and included 8 each in Hammersmith and St. Pancras, 4 each in St. Marylebone and Camberwell, and 3 in Kensington. The 15 fatal cases of scarlet fever were 6 below the average, and included 3 each in Southwark and Lambeth, and 2 in Hackney. The 66 deaths attributed to diphtheria were 8 above the average, and included 8 in Lambeth, 7 in Hackney, 6 in Poplar, and 5 in Southwark. The deaths from whooping-cough numbered 17, and were 16 below the average; of these, 2 each belonged to Islington, Hackney, Stepney, Bermondsey, and Lambeth. The 5 fatal cases of enteric fever were 4 below the average, and included 2 in Hammersmith. The 70 deaths from infantile diarrhoea were 67 below the average, and included 11 in Islington, 7 each in Stepney and St. Marylebone, and 5 in Woolwich. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during November was 38 per cent. below the average.

(Week ended Dec. 14th, 1918.)

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 16.4, against 23.7 and 19.8 per 1000 in the two preceding weeks. Of the 756 deaths from all causes, 18 were classified to influenza, which was also stated as a secondary cause in 108 deaths classified to other diseases; in the previous week these numbers were 24 and 165 respectively. The 322 deaths in Glasgow corresponded to an annual rate of 15.1 per 1000, and included 6 from infantile diarrhoea, 4 from whooping-cough, and 2 from diphtheria. The 103 deaths in Edinburgh were equal to a rate of 16.1 per 1000, and included 2 from diphtheria and 1 from whooping-cough.

(Week ended Dec. 21st, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 16.8 per 1000, against rates declining from 36.5 to 20.2 per 1000 in the three preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 16.0, or 2.2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 4.0 in Swindon, 5.1 in Hornsey, and 7.2 in Ipswich, to 27.9 in Dewsbury, 32.8 in West Hartlepool, 41.2 in Sunderland, and 48.9 in Barnsley. The principal epidemic diseases caused 154 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 52 from infantile diarrhoea, 47 from diphtheria, 21 from whooping-cough, 17 from measles, 13 from scarlet fever, and 4 from enteric fever. Diphtheria caused a death-rate of 1.1 in Liverpool and 2.9 in Oxford. The deaths from influenza, which had declined from 7557 to 1885 in the six preceding weeks, further fell to 1014, and included 186 in London, 68 in Birmingham, 55 in Manchester, 43 in Liverpool, 32 in

Bristol, and 31 in Sunderland. There were 2 cases of small-pox, 1030 of scarlet fever, and 1056 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital; the two latter were 59 below and 39 above the respective numbers remaining at the end of the previous week. The causes of 41 deaths in the 96 towns were uncertified, of which 8 were registered in Birmingham, 6 in Liverpool, and 3 in Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 14.8, against rates declining from 24.3 to 16.4 per 1000 in the four preceding weeks. Of the 683 deaths from all causes, 7 were classified to influenza, which was also stated as a secondary cause in 74 deaths classified to other diseases; in the previous week these numbers were 18 and 108 respectively. The 299 deaths in Glasgow were equal to a rate of 14.0 per 1000, and included 4 each from diphtheria and infantile diarrhoea, and 1 from whooping-cough. The 81 deaths in Edinburgh were equal to a rate of 12.7 per 1000, and included 3 each from scarlet fever and whooping-cough, and 1 from diphtheria.

Irish Towns.—The 145 deaths in Dublin corresponded to an annual rate of 18.9, or 3.1 per 1000 below that recorded in the previous week, and included 14 from influenza, 2 from infantile diarrhoea, and 1 from measles. The 145 deaths in Belfast were equal to a rate of 19.2 per 1000, and included 2 from infantile diarrhoea and 1 from diphtheria.

(Week ended Dec. 28th, 1918.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had declined from 36.5 to 16.8 in the four preceding weeks, further fell to 14.8 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 13.8, or 2.2 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 6.0 in Darlington, 7.3 in Enfield, and 7.6 in Ilford, to 28.1 in Sunderland, 27.3 in Bootle, 28.2 in Bury, and 45.7 in Barnsley. The principal epidemic diseases caused 137 deaths—the lowest number recorded in any week of the year; this number corresponded to an annual rate of 0.4 per 1000, and included 45 from infantile diarrhoea, 35 from diphtheria, 22 from measles, 13 from whooping-cough, 13 from scarlet fever, and 4 from enteric fever. The deaths from influenza, which had steadily declined from 7557 to 1014 in the seven preceding weeks, further fell to 581, and included 95 in London, 44 in Liverpool, 39 in Manchester, 25 in Birmingham, and 24 in Barnsley. There were 2 cases of small-pox, 1101 of scarlet fever, and 1105 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital; the two latter were 71 and 49 above the respective numbers remaining at the end of the previous week. The causes of 38 deaths in the 96 towns were uncertified, of which 10 were registered in Liverpool, 5 in Birmingham, and 3 in Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 16.1, against rates declining from 24.3 to 14.8 per 1000 in the five preceding weeks. Of the 744 deaths from all causes, 6 were classified to influenza, which was also stated as a secondary cause in

(Continued at foot of next column.)

The War and After.

DEMobilISATION OF THE BRITISH RED CROSS.

We have received from Sir Arthur Stanley, chairman of the Joint War Committee of the British Red Cross: Lord Plymouth, vice-chairman of the Joint Committee; Sir Robert Hudson, chairman of the Joint Finance Committee; and Mr. E. A. Riddale, chairman of the Central Demobilisation Board, a statement on the financial position of the Red Cross, which begins to be demobilised with the New Year. The signatories ask that all collections in this country may be wound up and remitted to the Joint War Committee by the end of January, and those from overseas not more than a month later. The annual report of the Finance Committee will appear shortly.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. H. R. Lawrence, M.C., South African M.C., qualified at Edinburgh in 1908, and was in practice at Newlands, Cape Province, South Africa, when war broke out. He at once volunteered for service, which he did in German South-West Africa, in England, and in France. He died in France of pneumonia.

Capt. A. J. Milne, South African M.C., qualified at Aberdeen in 1901, and was at one time M.O.H. of Mauritius. At the time of joining the Expeditionary Force he was acting M.O.H. of Johannesburg.

Wounded.

Lieut. M. S. Ullah, I.M.S.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Capt. H. R. Lawrence, M.C., South African M.C., died from pneumonia, only son of the late Dr. T. G. Lawrence, of George, S. Africa.

Lieut. E. A. F. Hawke, Royal Field Artillery, died at Woolwich, son of Dr. E. D. H. Hawke, of Shortlands, Kent.

Flight Capt. E. R. H. Beaman, R.A.F., killed in an aeroplane collision, son of the late General A. H. Beaman, I.M.S.

THE HONOURS LIST.

A long list of promotions and awards for valuable services rendered in connexion with military operations in the field and in connexion with the war was issued on Wednesday. We give here some of the awards to medical officers, and the remainder will be given in our next issue:—

K.C.B. (Military Division).

Maj.-Gen. (temp. Lt.-Gen.) C. H. Burtchall, C.B., C.M.G., K.H.S., A.M.S.

C.B. (Military Division).

Col. C. A. Young, C.M.G., A.M.S.; Temp. Col. A. Fullerton, C.M.G., A.M.S.; Temp. Col. H. A. Ballance, A.M.S.; Col. T. P. Jones, C.M.G., A.M.S.; Maj.-Gen. R. C. Munday, R.A.F.

C.B. (Civil Division).

Surg.-Capt. W. G. Axford, R.N.; Surg.-Capt. A. S. Nance, R.N.

K.C.M.G.

Surg. Rear-Admiral G. Welch, C.B.

C.M.G.

Temp. Col. (Maj., R.A.M.C.) G. E. Gask, D.S.O., A.M.S.; Col. J. Poe, D.S.O., A.M.S.; Temp. Col. J. A. Nixon, A.M.S.; Temp. Col. (Lt.-Col., R.A.M.C., T.F.) W. H. Hume, A.M.S.; Lt.-Col. W. K. Clayton, T.D., R.A.M.C., T.F.; Lt.-Col. (temp. Col.) A. J. MacDougall, R.A.M.C.; Lt.-Col. (temp. Col.) H. G. Martin, R.A.M.C.; Lt.-Col. (temp. Col.) S. de C. O'Grady, D.S.O., R.A.M.C.; Lt.-Col. (temp. Col.) H. Herrick, D.S.O., R.A.M.C.; Lt.-Col. (temp. Col.) H. S. Roch, D.S.O., R.A.M.C.;

(Continued from preceding column.)

50 deaths classified to other diseases; in the previous week these numbers were 7 and 74 respectively. The 355 deaths in Glasgow corresponded to an annual rate of 16.6 per 1000, and included 8 from whooping-cough, 6 from diphtheria, 3 from infantile diarrhoea, and 2 from scarlet fever. The 94 deaths in Edinburgh were equal to a rate of 14.7 per 1000, and included 5 from whooping-cough and 1 from diphtheria.

Irish Towns.—The 156 deaths in Dublin corresponded to an annual rate of 20.4, or 1.5 per 1000 above that recorded in the previous week, and included 9 from influenza, 4 from infantile diarrhoea, and 1 from measles. The 146 deaths in Belfast were equal to a rate of 19.4 per 1000, and included 2 from infantile diarrhoea and 1 from diphtheria.

Temp. Hon. Lt.-Col. H. Cabot, R.A.M.C.; Temp. Maj. (acting Lt.-Col.) J. Dalrymple, O.B.E., R.A.M.C.; Col. R. P. Wright, D.S.O., Canadian A.M.C.; Lt.-Col. S. Campbell, Canadian A.M.C.; Lt.-Col. J. F. Kidd, Canadian A.M.C.; Col. J. A. Dick, Australian A.M.C.; Lt.-Col. O. J. Martin, Australian A.M.C.; Col. D. J. McGavin, D.S.O., N. Zealand M.C.; Lt.-Col. D. N. W. Murray, D.S.O., N. Zealand M.C.; Surg.-Comdr. R. D. Jameson, R.N.; Surg.-Comdr. H. S. Burniston, R.N.

K.B.E. (Military Division).

Temp. Col. Sir A. E. Wright, Kt., C.B., F.R.S., A.M.S.; Col. (temp. Maj.-Gen.) S. Hickson, C.B., A.M.S.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned for distinguished and gallant services and devotion to duty in a despatch, dated Nov. 8th, 1918, received from the Commander-in-Chief of the British Armies in France:—

ARMY MEDICAL SERVICE: STAFF.

Lt.-Col. (temp. Col.) H. P. W. Barrow, C.M.G., D.S.O., R.A.M.C.; Lt.-Col. (temp. Col.) W. Bennett, D.S.O., R.A.M.C.; Col. E. W. Bliss, O.M.G., D.S.O.; Capt. and Bt. Maj. (acting Maj.) L. G. Bourdillon, D.S.O., M.C., R.A.M.C.; Lt.-Col. (temp. Col.) G. W. Brazier-Osagah, C.B., C.M.G., R.F.; Lt.-Col. (temp. Col.) B. E. Burke, D.S.O.; Maj.-Gen. (temp. Lt.-Gen.) C. H. Burtchall, O.B., C.M.G.; Maj.-Gen. H. Carr, C.B.; Capt. (acting Maj.) S. J. Clegg, R.A.M.C. (T.F.); Lt.-Col. (temp. Col.) H. Collinson, C.M.G., D.S.O., R.A.M.C. (T.F.).

Capt. (acting Maj.) W. H. Davison, R.A.M.C. (T.F.); Capt. (acting Maj.) T. I. Dun, M.C., R.A.M.C.

Capt. and Bt. Maj. (temp. Maj.) G. W. Ellis, R.A.M.C. (T.F.); Lt.-Col. (temp. Col.) O. W. A. Elsner, D.S.O.

Lt.-Col. (temp. Col.) H. B. Fawcous, C.M.G., D.S.O.; Lt.-Col. (temp. Col.) T. Fraser, D.S.O., R.A.M.C. (T.F.); Lt.-Col. (temp. Col.) R. S. H. Fuhr, C.M.G., D.S.O., R.A.M.C.

Lt.-Col. (temp. Col.) J. S. Galle, C.M.G., D.S.O.; Maj. (temp. Col.) G. E. Gask, D.S.O.; Capt. (acting Maj.) G. F. P. Gibbons, R.A.M.C. (S.R.); Col. H. W. Grattan, D.S.O.; Temp. Capt. A. H. Greg, R.A.M.C.

Lt.-Col. (temp. Col.) J. A. Hartigan, C.M.G., D.S.O., R.A.M.C.; Lt.-Col. (acting Col.) H. Herrick, D.S.O.; Lt.-Col. (acting Col.) H. Hewetson, D.S.O., R.A.M.C.; Col. (temp. Maj.-Gen.) S. Hickson, C.B.; Maj. (temp. Lt.-Col.) F. D. G. Howell, D.S.O., M.C.; Col. W. M. Hudleston, C.M.G., D.S.O.

Col. (temp. Maj.-Gen.) Sir J. M. Irwin, K.C.M.G., C.B.

Col. T. P. Jones, C.M.G.

Lt.-Col. (temp. Col.) L. N. Lloyd, C.M.G., D.S.O.

Lt.-Col. (temp. Col.) A. J. MacDougall; Capt. (acting Maj.) E. B. Marsh; Lt.-Col. (temp. Col.) H. G. Martin; Lt.-Col. (temp. Col.) F. McLennan, R.A.M.C.; Temp. Capt. (acting Maj.) L. Meakin; Col. (temp. Maj.-Gen.) S. G. Moores, C.B., C.M.G.

Capt. (temp. Col.) J. A. Nixon.

Col. D. M. O'Callaghan, C.M.G.; Capt. (acting Maj.) B. A. Odium, R.A.M.C.; Lt.-Col. (temp. Col.) S. de C. O'Grady, D.S.O.; Maj.-Gen. Sir M. W. O'Keefe, K.C.M.G., C.B.; Lt.-Col. and Bt. Col. G. J. A. Ormsby, D.S.O., R.A.M.C.

Capt. (acting Maj.) M. W. Paterson, M.C., R.A.M.C. (S.R.); Col. R. H. Penton, D.S.O., R.A.M.C.; Col. J. Poe, D.S.O.; Lt.-Col. (temp. Col.) J. Powell, D.S.O.; Col. O. W. Proffitt, C.M.G., D.S.O.; Col. H. V. Pryne, D.S.O., R.A.M.C.

Capt. (acting Maj.) A. L. Robertson; Lt.-Col. (temp. Col.) H. S. Roch, D.S.O., R.A.M.C.; Maj. (temp. Col.) D. Rorie, D.S.O.; Capt. (acting Maj.) W. H. Rowell; Maj. and Bt. Lt.-Col. (temp. Lt.-Col.) E. Ryan, C.M.G., D.S.O.

Lt.-Col. (temp. Col.) A. H. Safford; Maj. G. F. Sheehan, D.S.O.; R.A.M.C.; Lt.-Col. (temp. Col.) J. P. Silver, D.S.O., R.A.M.C.; Col. E. W. Slayter, C.M.G., D.S.O.; Temp. Capt. (acting Maj.) G. W. Smith; Temp. Col. A. B. Soltau, C.M.G.; Lt.-Col. R.A.M.C. (T.F.).

Col. G. St. C. Thom, C.B., C.M.G.; Lt.-Col. (temp. Col.) A. G. Thompson, C.M.G., D.S.O.; Maj.-Gen. H. N. Thompson, C.B., C.M.G., D.S.O.; Col. (temp. Maj.-Gen.) J. Thomson, C.B.; Col. H. S. Thurston, C.B., C.M.G.

Capt. (temp. Maj.) J. Walker, M.C., R.A.M.C. (S.R.); Capt. (acting Maj.) W. L. Webster; Lt.-Col. (temp. Col.) B. F. Wingate, D.S.O., R.A.M.C.; Capt. (temp. Maj.) A. E. Wright, D.S.O.

Col. C. A. Young, C.M.G.

CONSULTANTS.

Temp. Col. H. A. Ballance; Temp. Maj.-Gen. Sir J. R. Bradford, K.C.M.G., C.B., F.R.S.; Temp. Col. A. Fullerton, C.M.C.; Temp. Maj.-Gen. Sir W. P. Herringham, C.B.; Temp. Lt.-Col. G. M. Holmes, C.M.G.; Temp. Col. W. B. Hume; Temp. Col. W. T. Lister, C.M.G.; Temp. Maj. (acting Lt.-Col.) H. MacCormac; Temp. Col. S. M. Smith, C.B.; Temp. Col. Sir A. B. Wright, C.B., F.R.S.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. W. J. P. Adye-Curran; Temp. Capt. (acting Maj.) J. Alexander; Capt. (acting Maj.) J. A. Andrews, M.C.; Temp. Capt. (acting Major) W. B. G. Angus, M.C.; Temp. Capt. (acting Maj.) J. S. Arkle.

Temp. Lt.-Col. J. L. Birley; Temp. Capt. (acting Maj.) A. J. Blake, M.C.; Capt. and Bt. Maj. (acting Lt.-Col.) H. H. Blake; Temp. Capt. W. H. Blakemore; Temp. Capt. (acting Maj.) L. R. Broster; Temp. Capt. (acting Lt.-Col.) L. G. Brown, M.C.; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) C. G. Browne, D.S.O.; Maj. (temp. Lt.-Col.) R. A. Bryden, D.S.O.

Temp. Hon. Lt.-Col. H. Cabot; Capt. (acting Maj.) N. Cantile, M.C.; Maj. (acting Lt.-Col.) J. C. G. Carmichael; Temp. Capt. H. H. Carter; Capt. (acting Lt.-Col.) F. Casement, D.S.O.; Temp. Capt. (acting Maj.) R. Charles; Temp. Capt. T. Clapperton; Temp. Capt. N. A. Coward; Temp. Capt. R. L. Crabb; Temp. Capt. R. Crothers.

Temp. Lt.-Col. J. Dalrymple, O.B.E.; Temp. Capt. (acting Maj.) W. S. Danks; Maj. (temp. Lt.-Col.) H. A. Davidson, D.S.O.; Temp. Maj. R. Dick; Temp. Maj. W. S. Dickie; Temp. Capt. F. Dillon; Maj. (temp. hon. Lt.-Col.) G. Dreyer.

Maj. (acting Lt.-Col.) C. T. Edmunds; Temp. Capt. E. F. Emswiler, D.S.O.; Temp. Capt. J. E. English; Capt. (acting Lt.-Col.) T. S. Eves, D.S.O.

Lt.-Col. (acting Col.) F. G. Fitzgerald, D.S.O.; Capt. W. Foot, M.C.; Maj. (acting Lt.-Col.) W. H. Forsyth; Maj. J. R. Foster; Temp. Maj. T. M. Frood.

Temp. Capt. D. S. Graham; Temp. Maj. (acting Lt.-Col.) G. D. Gray; Temp. Capt. H. A. Grierson; Capt. J. H. Gurley.

Temp. Hon. Capt. F. Hall; Maj. (temp. Lt.-Col.) P. J. Hanafin, D.S.O.; Temp. Capt. C. G. Harmer; Capt. (acting Maj.) W. C. Hartgill, M.C.; Maj. (temp. Lt.-Col.) T. E. Harty, D.S.O.; Temp. Capt. (acting Maj.) J. H. Hebb; Capt. (acting Lt.-Col.) C. Helm, M.C.; Temp. Capt. W. J. Henry; Temp. Capt. S. P. Hodgkinson; Temp. Hon. Maj. T. Houston; Capt. (acting Lt.-Col.) I. R. Hudleston; Temp. Capt. J. B. Hunter, M.C.

Temp. Capt. (acting Maj.) R. C. Irvine.

Temp. Capt. T. B. Johnstone.

Temp. Capt. (acting Maj.) N. McD. Keith; Maj. (temp. Lt.-Col.) H. B. Kelly, D.S.O.; Temp. Capt. M. J. Kelly; Temp. Capt. L. Kilroe; Temp. Capt. G. B. King; Temp. Capt. (acting Maj.) A. E. Knight, M.C.

Temp. Capt. G. D. Laing; Temp. Capt. R. D. Laurie; Temp. Capt. L. R. Lempriere; Temp. Capt. P. R. Lowe; Temp. Maj. S. G. Luker; Temp. Capt. J. Lumb.

Temp. Capt. (acting Maj.) R. B. Macfie; Capt. K. P. Mackenzie; Temp. Capt. (acting Lt.-Col.) K. W. Mackenzie, D.S.O., M.C.; Temp. Capt. Malloch; Temp. Maj. (acting Lt.-Col.) E. H. Marshall, D.S.O.; Temp. Capt. A. E. S. Martin; Temp. Capt. (acting Maj.) A. Massey; Temp. Capt. (acting Maj.) R. Massie; Maj. (temp. Lt.-Col.) F. A. McCammon, M.C.; Temp. Capt. J. McDonnell, M.C.; Temp. Capt. J. P. McGreehin; Temp. Capt. J. B. P. McLaren; Temp. Capt. J. W. McLeod; Temp. Capt. K. C. Middlemiss; Temp. Capt. E. T. C. Milligan; Temp. Capt. W. Moodie; Temp. Capt. (acting Lt.-Col.) H. Moore, D.S.O., M.C. (died of wounds); Temp. Capt. J. Morris; Temp. Capt. (acting Maj.) W. G. Mumford; Maj. (acting Lt.-Col.) C. D. Myles, O.B.E.

Temp. Capt. G. E. E. Nicholls.

Maj. (acting Lt.-Col.) E. M. O'Neill, D.S.O.

Temp. Capt. (acting Maj.) M. P. Paton, M.C.; Maj. (temp. Lt.-Col.) H. S. Peeke; Temp. Capt. E. I. P. Fellow; Capt. H. M. J. Perry; Temp. Capt. H. J. Pickering; Temp. Capt. A. E. Pinniger; Capt. (acting Lt.-Col.) L. T. Poole, D.S.O., M.C.; Temp. Capt. A. V. Poyser; Capt. (acting Lt.-Col.) R. B. Price, D.S.O.

Temp. Capt. A. C. Reid; Temp. Capt. (acting Maj.) A. Richmond, M.C.; Maj. M. B. H. Ritchie, D.S.O.; Temp. Capt. (acting Maj.) T. C. Ritchie; Temp. Capt. (acting Maj.) J. E. H. Roberts; Maj. (acting Lt.-Col.) T. T. H. Robinson; Temp. Capt. (acting Maj.) R. B. Roe; Temp. Capt. H. A. Ronn; Temp. Capt. (acting Maj.) S. J. Rowntree.

Temp. Capt. S. H. Scott; Capt. (acting Lt.-Col.) T. H. Scott, D.S.O., M.C.; Temp. Capt. (acting Maj.) E. J. Selby; Temp. Capt. W. F. Shanks; Lt. (temp. Capt.) F. R. S. Shaw, M.C.; Temp. Capt. (acting Lt.-Col.) L. D. Shaw, D.S.O.; Temp. Capt. F. N. Stewart, D.S.O., M.C.; Temp. Capt. J. L. Stewart, D.S.O., M.C.; Capt. (acting Lt.-Col.) C. H. Stringer, D.S.O.; Temp. Capt. C. E. Sundell; Temp. Capt. (acting Lt.-Col.) R. Svensson, M.C.

Maj. (acting Lt.-Col.) R. G. H. Tate; Capt. E. S. Taylor; Capt. (acting Lt.-Col.) G. P. Taylor, D.S.O., M.C.; Temp. Capt. E. M. Townsend; Temp. Lt.-Col. C. J. Trimble, C.B., C.M.G., V.D.

Maj. (acting Lt.-Col.) T. B. Unwin.

Temp. Capt. (acting Maj.) R. J. Vernon.

Capt. and Bt. Maj. A. Walker, D.S.O.; Temp. Capt. K. M. Walker; Temp. Capt. H. H. White; Maj. C. F. White; Temp. Capt. R. W. Willocks; Temp. Capt. R. L. Williams, D.S.O., M.C.; Temp. Capt. (acting Maj.) H. G. Willis, D.S.O., M.C.; Temp. Capt. (acting Maj.) H. B. Wilson; Temp. Hon. Capt. W. Wilson; Temp. Capt. (acting Maj.) F. B. Winfield; Temp. Capt. R. S. Woods; Temp. Hon. Lt. H. W. Woodward; Capt. (acting Lt.-Col.) F. Worthington, D.S.O.

ROYAL ARMY MEDICAL CORPS (S.R.).

Capt. (acting Maj.) E. P. Ballard, M.C.; Capt. (acting Maj.) W. Barclay, M.C.; Capt. (acting Maj.) J. H. Bayley, M.C.; Maj. W. H. G. H. Best; Capt. A. D. Child; Capt. W. Darling, M.C.; Capt. (acting Maj.) D. Dougal, M.C.; Capt. C. Gamble; Capt. (acting Maj.) C. B. H. Gater; Capt. (acting Maj.) B. Goldsmith; Capt. (acting Lt.-Col.) C. J. A. Griffin; Capt. G. G. Jack; Capt. A. R. Laurie; Capt. (acting Maj.) G. Marshall; Maj. (acting Lt.-Col.) S. G. McAllum; Capt. (acting Lt.-Col.) W. McK. H. McCullagh, D.S.O., M.C.; Capt. (acting Maj.) W. C. B. Meyer; Capt. (acting Lt.-Col.) K. D. Murchison, D.S.O.; Capt. (acting Lt.-Col.) C. M. Page; Capt. (acting Lt.-Col.) A. T. Pitts, D.S.O.; Capt. (acting Maj.) H. D. Rollinson; Capt. E. S. Rowbotham; Capt. (acting Maj.) A. L. Shearwood; Capt. (acting Maj.) J. C. Spence, M.C.; Capt. (acting Maj.) L. W. O. Taylor; Capt. (acting Lt.-Col.) W. Tyrrell, D.S.O., M.C.; Capt. (acting Maj.) W. W. Wagstaffe; Capt. (acting Lt.-Col.) J. H. Ward, D.S.O., M.C.; Capt. (acting Maj.) C. J. B. Way, M.C.; Capt. C. O. J. Young, M.C.

ROYAL ARMY MEDICAL CORPS (T.F.).

Capt. (temp. Maj.) H. C. Adams; Capt. (acting Lt.-Col.) E. Alderson, D.S.O.

Capt. (temp. Lt.-Col.) J. Barkley; Capt. (acting Maj.) C. B. Baxter; Capt. (acting Lt.-Col.) W. Blackwood, D.S.O.; Maj. H. D'A. Blumberg, T.D.; Capt. (acting Maj.) W. Briggs; Capt. A. S. Bruzard; Capt. (acting Lt.-Col.) R. Burgess, M.C.; Capt. (acting Maj.) H. Burrows; Capt. J. W. Burton.

Maj. (acting Lt.-Col.) A. Callam; Capt. J. Chalmers; Lt.-Col. W. K. Clayton, T.D.; Capt. (acting Maj.) H. D. Clementi-Smith; Capt. (acting Lt.-Col.) L. D. B. Cogan; Capt. (acting Lt.-Col.) J. M. A. Costello, M.C.; Maj. (acting Lt.-Col.) E. H. Cox; Capt. (temp. Lt.-Col.) H. H. B. Cunningham.

Capt. (acting Maj.) J. Dale; Capt. (acting Lt.-Col.) H. K. Dawson, D.S.O.; Capt. (acting Lt.-Col.) F. G. Dobson; Capt. (acting Maj.) H. Drummond.

Capt. (temp. Lt.-Col.) C. W. Rames.

Capt. (acting Maj.) R. V. Favell; Capt. (acting Maj.) N. M. Fergusson; Capt. (acting Maj.) D. E. Finlay; Capt. N. S. Finzi; Capt. (temp. Maj.) M. G. Foster; Capt. (acting Lt.-Col.) J. H. P. Fraser, M.C.; Capt. (acting Maj.) W. D. Frew.

Maj. W. H. G. Illoy; Capt. N. Gebbie; Capt. (acting Maj.) J. Graham; Capt. (acting Lt.-Col.) F. L. A. Greaves.

Capt. (acting Major) T. W. Hancock; Capt. (acting Maj.) F. Hauxwell; Maj. (temp. Lt.-Col.) A. R. Henchley, D.S.O.; Lt.-Col. F. W. Higgs; Lt.-Col. (temp. Col.) C. H. Howkins, D.S.O.

Capt. J. Jackson; Capt. R. Jacobs (killed in action); Capt. A. E. Jury.

Capt. (acting Maj.) N. W. Kidston.

Capt. (acting Lt.-Col.) C. L. Lauder, M.C.; Capt. H. Lightstone, D.S.O., M.C.; Capt. (acting Maj.) H. B. Low, M.C.

Capt. (temp. Lt.-Col.) J. MacMillan, M.C.; Capt. S. A. S. Malkin; Capt. (acting Maj.) T. B. McKee; Temp. Capt. (acting Maj.) A. Mearns; Capt. (acting Maj.) W. H. Morrison; Maj. A. R. Murray.

Capt. J. C. Newman.

Capt. H. D. Pickles, M.C.; Capt. (acting Maj.) H. B. Pope; Maj. (temp. Lt.-Col.) T. P. Puddicombe, D.S.O.

Capt. J. Ramsay; Capt. S. E. Rigg; Maj. (temp. Lt.-Col.) H. B. Roderick.

Capt. F. W. Schofield; Capt. (acting Lt.-Col.) D. J. Scott, M.C.; Capt. (acting Lt.-Col.) H. Seddon; Maj. (acting Lt.-Col.) J. H. Stephen; Maj. (temp. Lt.-Col.) W. G. Sutcliffe.

Capt. A. White; Maj. (acting Lt.-Col.) G. F. Whyte; Maj. (acting Lt.-Col.) P. G. Williamson, M.C.; Capt. (acting Lt.-Col.) T. B. Wolstenholme.

Capt. (acting Lt.-Col.) J. Young.

CANADIAN ARMY MEDICAL CORPS.

Maj. (acting Lt.-Col.) W. A. G. Bauld; Lt.-Col. R. A. Bowie; Lt.-Col. E. H. Brown; Capt. M. G. Brown; Lt.-Col. P. G. Brown; Maj. J. F. Burgess; Lt.-Col. S. Campbell; Capt. G. F. Denyes; Lt.-Col. A. S. Donaldson, D.S.O.; Hon. Capt. J. A. Dougan; Capt. (acting Maj.) G. J. Gillam; Capt. J. Graham; Capt. S. E. Holmes; Lt.-Col. J. F. Kidd; Capt. W. J. MacKenzie; Capt. T. A. Malloch; Lt.-Col. B. Maxwell; Maj. R. J. McEwen; Maj. D. W. McKechnie, D.S.O.; Lt.-Col. H. E. Munroe; Lt.-Col. T. J. F. Murphy, D.S.O.; Maj. H. Orr; Maj. S. G. Ross, D.S.O., M.C.; Lt.-Col. E. Seaborn; Capt. A. H. Veitch; Lt.-Col. C. W. Vipond; Capt. R. E. A. Weston; Capt. T. Whitmore (died of wounds); Maj. (acting Lt.-Col.) J. H. Wood.

AUSTRALIAN ARMY MEDICAL CORPS.

Maj. A. W. H. a'Court; Maj. H. I. Carlile; Lt.-Col. R. W. Chambers; Maj. A. J. Collins, D.S.O., M.C.; Lt.-Col. W. E. L. H. Crowther; Col. J. A. Dick; Lt.-Col. (temp. Col.) T. P. Dunhill; Maj. C. N. Finn; Lt.-Col. H. K. Fry, D.S.O.; Lt.-Col. A. H. Gibson; Capt. A. J. de S. Howard; Lt.-Col. A. F. Jolley; Maj. F. D. H. B. Lawton; Maj. (temp. Lt.-Col.) F. N. Le Messurier, D.S.O.; Maj. G. B. Lowe; Lt.-Col. G. W. MacArthey; Maj. (temp. Lt.-Col.) A. F. MacLure; Lt.-Col. C. J. Martin, F.R.S.; Maj. A. McKillop; Maj. J. B. Metcalfe, D.S.O., M.C. (died of wounds); Maj. C. Morlet; Maj. W. A. Morton; Maj. J. D. Norris; Capt. S. V. O'Regan, M.C.; Maj. V. W. Savage; Maj. W. C. Sawers; Maj. (temp. Lt.-Col.) V. O. Stacy; Maj. D. MacD. Steele, M.C.; Maj. R. St. C. Steuart; Maj. L. G. Tassie, D.S.O.; Lt.-Col. W. G. D. Upjohn; Maj. F. L. Wall, M.C.; Lt.-Col. A. M. Wilson, D.S.O.

NEW ZEALAND MEDICAL CORPS.

Maj. F. T. Bowerbank; Lt.-Col. G. Craig; Maj. E. L. Marchant; Col. D. J. McGavin, D.S.O.; Lt.-Col. H. J. McLean; Lt.-Col. D. N. W. Murray, D.S.O.; Capt. Simcox.

SOUTH AFRICAN MEDICAL CORPS.

Capt. (acting Major) H. R. Mullins; Maj. M. S. Power, D.S.O.

AMERICAN MEDICAL CORPS.

Lt.-Col. R. H. Harte, Harvard Unit; Maj. R. I. Lee, Harvard Unit.

OBITUARY OF THE WAR.

DENIS COTTERILL, M.B., CH.B. EDIN., F.R.C.S. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain D. Cotterill, who died of pneumonia following influenza on Dec. 2nd, at the age of 37 years, was eldest son of Lieutenant-Colonel J. M. Cotterill, C.M.G., consulting surgeon to Edinburgh Royal Infirmary. Educated at the Edinburgh Academy, he went on to Christ's College, Cambridge, where he spent two years in medical study. He completed his curriculum in Edinburgh, gaining distinction in pathology and surgery, and graduated in 1906. In 1910 he was elected a Fellow of the Royal College of Surgeons, Edinburgh, and took his seat as a Fellow during his father's presidency of the presidential chair. He was house surgeon under the late Professor Annandale, and on the Continent and in London and Liverpool studied surgery, especially in its orthopaedic aspects, in which he intended to specialise. On his return to Edinburgh Captain Cotterill began practice as a surgeon, acted as tutor in clinical surgery, and in 1913 was appointed an assistant surgeon to the Royal Infirmary.

In November, 1914, he went to France and was attached to No. 11 Stationary Hospital at Rouen, where he worked for some time, maintaining a high standard of surgical work. Later he resigned his appointment at Rouen, joined



the R.A.M.C., and was appointed to No. 50 Casualty Clearing Station, where, during the early days of the great advance and subsequent fighting, his unit was often working day and night without cessation. Captain Cotterill married in 1908 Miss Emily Roberts, and leaves a widow and two sons.

HERBERT GEORGE FLAXMAN SPURRELL, M.A.,
M.B., B CH. OXF.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain H. G. F. Spurrell, who died of pneumonia at the 19th General Hospital, Alexandria, on Nov. 8th, at the age of 41 years, was only son of the late Herbert Spurrell, of Eastbourne. Educated at Merton College, Oxford, where he gained the Welsh Memorial Prize in 1901 and took the M.A. degree, he qualified in 1907 from the London Hospital, taking the Diploma of the London School of Tropical Medicine in 1912. He was then Assistant Professor of Physiology at the University of New Orleans for a year, and held medical appointments in West Africa and South America, where he



indulged a passion for scientific research and discovered several new zoological species. One of these was a new species of West African rodent, *Anomalurus imperator*, a type of which he presented, together with a number of other rare and interesting West African mammals, to the British Museum. Whilst in Colombia he continued his zoological research, and during the first few months of his stay in the Choco brought together a series of batrachians and reptiles which

he presented also to the British Museum. A further important series of these animals was collected and presented by him in 1914, and in 1915 he discovered and presented a new limbless reptile (*Amphisbaena spurrelli*) and a new snake (*Herpetodryas vicinus*). In recognition of his work he was awarded the silver medal of the Zoological Society. On his return from Colombia in 1915 he was sent abroad by the Government on a secret mission, and in 1916-17 acted as Temporary Medical Officer at Obuss, S. Ashanti. In 1917 he took a commission in the R.A.M.C. and was employed on the R.A.F. Medical Board until his death. Besides his scientific monographs Captain Spurrell wrote a book on social evolution, entitled "Modern Man and His Forerunners," and a popular work on physiology.

Major D. D. JAMIESON, M.C., A.A.M.C., who met his death as the result of an aeroplane accident which occurred on July 18th, at the age of 39 years, was born at Kew, Melbourne. Educated at Hawthorn Grammar School, he graduated in medicine and surgery at Melbourne University in 1905, and practised at Perth, Fremantle, and Laverton Hospitals, and at Katoomba, N.S.W., and Stawell Hospital, Victoria. He joined the A.I.F. in July, 1915, and served for a short time in England before proceeding to Egypt. On his arrival in 1916 he joined the 2nd Light Horse Field Ambulance, and was awarded the Military Cross for gallantry and devotion to duty in the field at the Bir-el-Abd battle in September, and was mentioned in despatches. He acted as adjutant and was with his Brigade during all its operations in Sinai. In 1917 Major Jamieson was transferred to the 8th Light Horse as R.M.O., and remained with them until he proceeded to Port Said to await transport duty to Australia, where he met with the accident which resulted in his death. He was promoted to the rank of Major in November, 1916. He was associated with the 2nd Brigade and the 8th Light Horse Regiment in all the main engagements the Light Horse had undertaken since crossing the Suez Canal.

Obituary.

NOTTIDGE CHARLES MACNAMARA, F.R.C.S. ENG.,
F.R.C.S. IREL.,

CONSULTING SURGEON TO THE WESTMINSTER HOSPITAL.

Mr. N. C. Macnamara, who died on Nov. 21st, after a brief illness, at the advanced age of 86, retained to the end his keen and penetrating interest in life. He was a student at King's College, London, qualified with the Membership of the Royal College of Surgeons of England in 1854, and became almost immediately an assistant surgeon in the East India Company's service. On arrival in India he took charge of the First Bengal Fusiliers and before he had been many weeks at Dinapur was called upon to grapple with an appalling outbreak of cholera with only a few coolies to help him. Cholera remained for long a chief interest with him, and his "History of Asiatic Cholera" went through several editions and was translated into various languages. In the following two years Macnamara served in the Sonthal rebellion, and during the Indian Mutiny was officer of the Tirhut Volunteers until he was placed by the Viceroy in charge of the captive King of Oude. Later he became civil surgeon of Mirzapur and professor of ophthalmic surgery in the Calcutta Medical College. His ophthalmic work gained him widespread recognition, and the natives on whom he operated regarded him with veneration, while he was able to carry out in the face of great difficulties the desire of his heart to establish an ophthalmic hospital for the native poor of Calcutta. In 1866 he published a volume of lectures on Diseases of the Eye, of which a fifth edition appeared in 1891, while the year in which he became surgeon-major, 1873, was marked by the publication of "Lectures on Diseases of Bones and Joints," a third edition of which appeared in 1887. For three years he was editor of the *Indian Medical Gazette*.

In 1875 Macnamara obtained the F.R.C.S. Eng., and retiring from the service in the following year was appointed surgeon and lecturer on clinical surgery to the Westminster Hospital and surgeon to the Royal Westminster Ophthalmic Hospital, becoming consulting surgeon to both hospitals on his retirement from active work in 1897. He was elected a Fellow of the Royal College of Surgeons, Ireland, in 1887, and from 1885 to 1901 he was a member of the Council of the Royal College of Surgeons of England and Vice-President in 1893 and 1896. He was the Bradshaw lecturer, 1895, on Osteitis, and Hunterian orator in 1901, taking for his subject the Human Skull in Relation to Brain Growth. As a member of the British Medical Association he did much useful work, being a member of Council, chairman of several committees, Vice-President of the Section of Surgery at the annual meetings in 1881 and 1895, President of the Section of Ophthalmology in 1891, and treasurer of the Association from 1885 to 1887. He also took a keen interest in the work of the Royal Medical and Chirurgical Society and played a generous and active part in securing the house in Hanover-square, which it occupied for several years.

In addition to his contributions to medical literature, Mr. Macnamara wrote the articles on Cholera and Tetanus for the first edition of Quain's "Dictionary of Medicine," and those on Cholera and Leprosy in Davidson's "Hygiene and Diseases of Warm Climates," while two volumes of the "International Scientific Series," on the evolution of purposive living matter, are from his pen. His latest published book, "Instinct and Intelligence," which we reviewed in these columns at the beginning of 1916, was a plea for an alteration in our present system of education in which he sustained the thesis that "The animal side of man's nature results from a specific arrangement of elements entering into the formation of his central nervous system which he has inherited from his progenitors and cannot, therefore, get rid of or permanently alter."

Macnamara was one to whom work was a delight, and his numerous appointments did not prevent a considerable literary activity. Both were an expression of an overflowing physical energy. He revelled in outdoor exercise—hunting, shooting, and later golf. With a great dislike for formal entertaining he kept open house to all his friends. On reaching his seventieth year he retired into the country at Chorley Wood, ever continuing busy with the writing of books. Mr. Macnamara married Mia, daughter of the

Hon. Henry Vincent Bayley, and had two sons and six daughters. His eldest son, Lieutenant-Colonel Carroll Macnamara, was killed at the Battle of the Somme.

LEONARD GEORGE GUTHRIE, M.D., B.CH. OXON.,
F.R.C.P. LOND.,

PHYSICIAN, HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE, ETC.

THE death of Dr. Leonard Guthrie, which occurred on the morning of Dec. 24th last as the result of an accident the previous evening, is an event which will bring deep sorrow to many hearts. He was a man of an exceedingly fine sensitive nature, with many friends and no enemies, and he will be mourned alike by gentle and simple. He had reached his sixty-first year, but he had no appearance of such age, and his interest in his work and his recreations was undimmed, and, indeed, had become keener as he advanced in years. He was unmarried, but he lived with a brother to whom he was devoted, and to whom all who know him will offer their keenest sympathy.

Leonard Guthrie was educated at King's College School and then proceeded to Magdalen College, Oxford, where he subsequently took his M.A. and M.D. degrees. His medical education he completed at St. Bartholomew's Hospital. His time there was not very congenial. The energetic and perhaps somewhat boisterous medical student life was not suited to his gentle and retiring nature, and it was only a few years later that he really found his *métier* in clinical work, which he could pursue in his own fashion. He became connected with the Paddington Green Children's Hospital, first as house physician and then as physician, and at the time of his death he was senior physician to that institution. His work there was a constant pleasure to him, and no one will ever know the innumerable acts of unostentatious kindness which he showed to patients and staff alike. He was for several years physician to the North-West London Hospital, but he severed his connexion with that hospital when it became amalgamated with the Hampstead Hospital. He was also on the staff of the Hospital for Epilepsy and Paralysis when it was in Regent's Park, and he remained connected with it when it moved to Maida Vale, and had much to do with its reconstruction there. He became senior physician there on the recent death of his colleague Dr. George Ogilvie, whose career is also made the subject of notice this week. He also acted as consultant to several other institutions, and during the war he was on the staff of Lord Knutsford's Hospitals for Neurasthenic Officers. He had filled the office of President of the Harveian Society and of the Section for the Study of Disease in Children of the Royal Society of Medicine. He had recently been assisting the Registrar of the Royal College of Physicians of London—a duty which gave him the keenest pleasure. His historical knowledge and interests were such as to make such work as he was called upon to do in this capacity extremely congenial, and there is no doubt that the recognition of his ability and capacity which the invitation to such labours implied was a great gratification to one who, like Guthrie, was too modest and too ready to undervalue his own abilities. He had only just been appointed examiner in medicine to the University of Oxford and was keenly anticipating a renewal of his connexion with the University.

Dr. Guthrie's medical interests, as will be evident from his appointments, were chiefly in children's diseases and nervous disorders. His main literary work, "The Functional Nervous Disorders of Childhood," indicated this duality of interests. It is a work of great ability inspired by sympathy and keen observation, and written with a graceful literary charm not too common in medical writings. He also contributed several articles to Garrod and Batten's "Diseases of Children" and to Allbutt's "System of Medicine." His article on "Night Terrors" in that System is one of the best known, and one of the most readable medical articles that has ever been written. His FitzPatrick lectures at the Royal College of Physicians of London on the History of Medicine form a marvellous storehouse of medical history, and it is to be regretted that they were never published in book form. Like many others, he was deeply interested in the medical history of Napoleon Bonaparte, and his article contributed to the International Medical Congress of 1913, "Did Napoleon Bonaparte Suffer from Hypo-pituitarism

Towards the Close of His Life?" is a careful examination of the question, arriving, we feel, at convincing conclusions.

A good many years ago several series of "Hospital Sketches" were published in the *Pall Mall Gazette*, and subsequently appeared as a small volume. It is now known that Leonard Guthrie was the author of these, and all who have read them agree that no such true and accurate, and at the same time humorous, descriptions of out-patient experience at a children's hospital have ever been written. It may well be said that all that Guthrie wrote was characterised by accurate and graphic observation, and was pervaded by scholarliness and human interest. The man was behind all that he wrote, but the man was much more than anything he wrote. His was one of the most delightful and lovable natures, full of sympathy which overflowed in every direction. And yet he was so modest and unassuming that he was almost ashamed to be discovered in any good action. To his friends who all loved him, his loss is irreparable; to those who were nearest and dearest to him his death is no less than a calamity.

GEORGE OGILVIE, M.B., C.M., B.Sc. EDIN.,
F.R.C.P. LOND.,

SENIOR PHYSICIAN TO THE FRENCH HOSPITAL AND TO THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE; PHYSICIAN, SPANISH EMBASSY.

Dr. George Ogilvie, who died on Saturday, Dec. 14th, 1918, after an illness of some weeks' duration following an accident, was born in 1852. He was educated at Hamilton and at Edinburgh University, where he graduated B.Sc. in Mathematical Sciences in 1875 and M.B., C.M. in the following year. He was also "Neill-Arnett" prizeman. After completing his medical education by taking courses at Paris, Würzburg, Vienna, and Florence, he started practice



as a physician in London. In 1881 he was appointed physician to the Hospital for Epilepsy and Paralysis, Maida Vale, and in 1889 to the French Hospital. He was senior physician to both these institutions at the time of his death, and it was in recognition of his services to the French Hospital that he received the Order of Chevalier de la Légion d'Honneur. For similar services he was created Knight, Order of Isabel la Católica, and Knight, Order of Nossa Senhora de Vila Viçosa by the Spanish and Portuguese Governments respectively. In 1889 he became a Member of the Royal College of Physicians, and in 1908 he was elected to the Fellowship.

As a physician and neurologist he was sound, acute in observation, and essentially practical in treatment. Perhaps the most important of his contributions to medical literature was a paper on the Exceptions to Colles's Law (Med. Chir.

Trans., vol. lxxix.). Although the discovery of the *Spirochaeta pallida* and of the Wassermann reaction renders Colles's law a matter of rather academic interest now, the paper aroused considerable attention and discussion at the time. Other papers of his on the Inheritance of Disease, Les Descendants des Tuberculeux, Hérédité-prédisposition, the Transmission of Syphilis to the Third Generation, show the trend of his studies and investigations, and all are characterised by the same clearness of thought, logical sequence of ideas and conclusions, and, moreover, by punctilious attention to literary style and composition. He was a very well-read man, an ardent student of Shakespeare, poetry, and general literature. An accurate knowledge of the history of individuals and of countries was thus acquired, while he had a curious topographical sense, being able to point out at once on the map the name of any town or locality in the world, however obscure and insignificant it might be. An accomplished linguist, he spoke German fluently and French like a Frenchman, and he had also a sound acquaintance with Spanish and Italian. His reputation as a raconteur was early established, and in pre-war days the entertainment at medical banquets and functions never seemed complete without "some of Ogilvie's stories," which, in his deep grave voice, he told so effectively and humorously. A thoroughly kind-hearted man, he never said an ill-natured word and was ever ready to give help to any struggling or youthful professional brethren. We have sketched a "citizen of the world," and such, with his *bonhomie* and unaffected geniality, strong views, and fairness in argument, was Ogilvie. His imposing presence seemed sometimes to embarrass him, for he often made jocose remarks concerning it, but he was not unduly sensitive on the point, and he thoroughly enjoyed a not altogether flattering presentment of him in the pages of *Punch*.

Death has removed a familiar personage in medical circles, one who was liked by all who knew him, and loved by many friends. He married in 1893 Helen, daughter of the late Surgeon-General John Houston, who survives him, and to whom and other members of his family we tender our sympathy and regret.

C. S. HAWES, M.R.C.S. ENG.

Colin Sadler Hawes, M.R.C.S. Eng., who died after a long illness on Dec. 15th, in his forty-third year, was educated at Haileybury and St. Bartholomew's Hospital, where he was *proxime accessit* for the Brackenbury scholarship and house surgeon. Qualifying in 1900, he went out two years later to South Africa to take up an appointment at the hospital at Grahamstown. It was here that pulmonary tuberculosis became manifest, and the rest of his life was spent in a brave and patient struggle against his disability. For a time he acted as assistant at the sanatorium at Nordrach-upon-Mendip, and after the outbreak of war successively held appointments at St. Andrew's Hospital, Dollis Hill, and at the South African Hospital in Richmond Park. A man with a genius for making friends, and who, given health and strength, would have made a mark in his profession, he has left an example of a struggle against heavy odds borne with fortitude.

Sir William Bartlett Dalby, consulting aural surgeon to St. George's Hospital, died on Dec. 29th last, at Montagu-place, London, where he had resided since his retirement.

Sir Ernest Tritton, the well-known financier, who died on Dec. 28th last, after a short illness, was vice-chairman of the Metropolitan Hospital Sunday Fund.

HOME FOR MEN DISABLED BY THE WAR.—The Committee of the Royal Portsmouth Hospital have become responsible for the management of a large house at Purbrook Park, which under a scheme of the War Pensions Committee is to be fitted up as a home for paraplegics and convalescent discharged sailors and soldiers. It is hoped that accommodation will be available before the end of the present winter for 20 paraplegic cases and from 10 to 15 convalescent cases. The number of Portsmouth men needing treatment increases considerably. There are now no fewer than 4365 disabled men upon the local register.

Correspondence.

"Audi alteram partem."

THE PRACTICE OF THE ABSENTEE.

To the Editor of THE LANCET.

SIR,—The letter appearing under the above heading in your issue of Dec. 28th, 1918, shows that notwithstanding the fairly wide distribution of information and the letter written by Sir A. Pearce Gould after Sir Watson Cheyne's suggestion appeared, the objects and the existence of the "War Emergency Fund" do not seem to be sufficiently known. I beg leave, as treasurer of this Fund, to say that it exists to provide as a free gift assistance to members of our profession who have suffered financially owing to war service. There is no question of loan. There is an impression among some that the fact of having received help would become known in their neighbourhood. Let me say that the means taken to prevent this render such an occurrence practically impossible. The facts are known to a small committee in the first instance—often only the president, secretary, and treasurer. Thenceforward the applicant is represented by a number. Any information can be obtained from the honorary secretary, 11, Chandos-street, Cavendish-square, W. 1. We are prepared to consider applications at any time, and hope no one will look upon this effort on the part of their brethren as a charity. It is a recognition of the sacrifices they have made in many ways, and we hope will be accepted in this spirit and in no sense as a charity.

I am, Sir, yours faithfully,

CHARTERS J. SYMONDS,
Treasurer, War Emergency Fund.

Dec. 31st, 1918.

To the Editor of THE LANCET.

SIR,—For some time past you have been publishing, at intervals, letters written in a similar strain to that of "Major, R.A.M.C. (T.O.)," appearing in THE LANCET of Dec. 28th, 1918. Here are a few choice extracts from his letter: "Sir Watson Cheyne's proposal to lend money to medical men whose practices have been filched from them owing to their absence at the front"; "These men have been as much injured by their professional brethren as their Belgian colleagues have been by the Hun"; and "It is now suggested by Sir Watson Cheyne that some of the ill-gotten gains of the medical pilferers should be advanced on loan at interest to their victims."

This is nice sort of language to use of the medical men who have stayed at home and have overworked themselves in looking after the patients of absentee doctors as well as their own. I honestly believe that in the town to which I belong the medical men who have stayed at home have loyally done their best to play the game and keep together the practices of their absentee colleagues. It has, of course, been impossible to keep the incomes from the absentees' practices up to their former level, for no patient will send as readily for a stranger as he would for his own doctor, and therefore he has probably "carried on" on several occasions when, had his own doctor been at home, he would have sent for him. I am sorry to think it is true that many have suffered as "Major" appears to have done, but that is no justification for alluding to the home profession generally as "medical pilferers." It would be more fair to the men at home if "Major," or any other correspondent wishing to write in the same strain, would sign his letter with his own name, or give the town to which he belongs, or both. Then perhaps something might be done. Many, besides myself, resent extremely the tone of such letters as "Major's," and would have expressed their resentment before, but that they have had something else to do than write letters.

I am, Sir, yours faithfully,

Bolton, Dec. 25th, 1918.

F. R. MALETT.

PRIMITIVE AGENTS IN TREATMENT.

To the Editor of THE LANCET.

SIR,—I was much interested in the leading article which appeared under the above title in your issue of Dec. 21st. I wish heartily to endorse the opinions expressed, since from careful observation and personal direction of these primitive agents I know that they are infinitely more

effective and less costly than other and more generally accepted methods for the remedy of certain disabilities, when intelligently applied. It is in the hope that serious consideration will be given by the State to the adoption of these means not merely for sailors and soldiers disabled in this war but for those engaged in other public or national services of the future that I write this note. At a very large command dépôt, of which I was appointed to the medical charge, I found, on taking over, a great amount of indoor treatment being done with not very satisfactory results, but on sweeping out much apparatus and substituting outdoor physical training a striking improvement followed. The system of open-air physical training was therefore developed to its fullest extent, supplemented by hydro-therapy and massage for a small percentage of cases. Dr. Frank Radcliffe, who contributed a letter to THE LANCET on the Value of Physical Treatment,¹ ably assisted me in this work and had charge of those men requiring special or individual attention. The vast majority of the men were dealt with in larger squads or classes under special instructors who had been trained at the Army Physical Training Schools at Winchester or Aldershot. Graduated exercise has done an immense deal for tuberculosis (the question of auto-inoculation apart), and I am confident that, properly supervised, outdoor physical exercise will refit a large number of men who, treated under other conditions, would drift into a state of pauperism.

I am, Sir, yours faithfully,

J. H. P. GRAHAM,

Manchester, Dec. 23rd, 1918. Lieutenant-Colonel, R.A.M.C. (S.R.).

THE MEDICAL EXAMINATION OF AVIATION CANDIDATES.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 14th Dr. G. A. Sutherland rightly says that a proper selection of men fit to fly cannot be made unless the examiner is also fit to make a proper selection. He then goes on to show how the examiner should be trained in this work, laying down principles which should act as a guide. With these excellent principles all will agree; the practical application of them, however, on the part of the examiner is by no means easy. It takes time to make an experienced assessor, able to weigh one set of functions against another. The beginner is apt to be over-cautious in estimating the character of the pulse and in imagining cardio-vascular debility. In certain men with large muscles it is difficult to feel the radial pulse when the arm is raised, and it is necessary to press deeply with the fingers. When raising the arm to estimate the character of the pulse the elbow must be bent to prevent the muscles becoming tense. These are some of the practical points liable to be overlooked by beginners.

Standards of aerial fitness must be adapted to the varying conditions. At the beginning of the war it was thought wonderful for an aeroplane to travel 60 miles an hour and to rise to a height of 10,000 feet in half an hour. Now it is usual for airmen to travel at three times that speed and to ascend in one-sixth the time, and the end is not yet. Now, when we subject the human body to such sudden changes in oxygen pressure and temperature it is reasonable to devise some test to decide whether a rapid ascent to a high altitude can be tolerated. This is a question where physiology can be usefully combined with clinical medicine. If a simple test can be devised it should certainly be used. Amongst the borderland cases we want evidence which will throw light on the functional efficiency of the cardio-vascular and nervous systems. Dr. Sutherland suggests that to stand the candidate on one leg with his eyes shut for 15 seconds, to observe whether his outstretched fingers are tremulous and whether his knee-jerks are normal is sufficient evidence for the examiner to go upon. These are all important points, no doubt, but why not test also the cardio-respiratory centres in the medulla? This can be done thus:—

The candidate is directed to expire so as to empty the chest and then to take a deep inspiration and blow through a tube so as to raise a column of mercury to the height of 40 mm. and keep it there for 40 or 50 seconds. The experiment may produce considerable embarrassment, with marked flushing of the face, and when asked to describe his sensations the candidate will often say that he felt a "bursting in the head" or that "he felt giddy." This may be termed an abnormal answer.

¹ THE LANCET, 1918, II., 880.

On the other hand, a youth who has good nervous control and a good cardio-vascular system will hold his breath against 40 mm. Hg pressure, with little or no discomfort for the same period, and his answer will be that he "wanted to breathe" or he "wanted more air"—a normal answer. During the holding of the breath the pulse-rate in the two cases varies: in the normal boy the rate will increase from 20-30 beats per minute and stay there until the end of the experiment, whilst in the abnormal case the rate will increase by 60 or more beats per minute, and before the end of the experiment it will drop to a rate lower than at the commencement. I have watched the manometer test in a great variety of cases, and I feel sure that it has its value and should form part of our examination, because it affords evidence of the stability of nerve centres which cannot be elicited in any other way; but, of course, it should never take the place of a thorough physical examination.

The Medical Research Committee have published some statistics on this subject which show that successful pilots who are fit can pass this test, whilst those who are "stale" or who have suffered from crashes cannot. More work is, no doubt, required before the test can be generally accepted, but at this early stage in the problems of flight we must try to keep our minds open with regard to the tests for flying men.

A number of chamber experiments have been carried out on men who have suffered from faintness or other flying disabilities at certain heights. The conditions prevailing at these varying heights, such as pressure and lack of oxygen, have been reproduced, and it is remarkable how the same symptoms appear again at approximately the same heights. These results seem to me to be too suggestive to be passed over in silence.—I am, Sir, yours faithfully,

H. RONALD CARTER,

Temp. Capt. R.A.F.; late Member, Aviation Candidates Medical Board.
Dec. 17th, 1918.

ADVANCES IN THE TREATMENT OF FRACTURES.

To the Editor of THE LANCET.

SIR,—In their letters in THE LANCET of Dec. 14th and 21st Dr. R. Scott Skirving and Sir W. Arbuthnot Lane have brought to notice again the great importance of Major M. Sinclair's work on the treatment of fractures. The military surgeon has found the methods he has advocated of the greatest value, and a large sum of money in pensions has been saved by their adoption. No other method of splinting can compare with Major Sinclair's for immobilising the parts, extending fractures, and at the same time allowing of easy access for dressing the wound. On his net frame cases that would be otherwise a perfect nightmare to sisters become quite easy to dress and nurse, and the patient ceases to live in constant dread of the next dressing, or drawing of his sheet. By fitting the patient's boot on to a Thomas's splint a cheap and easily obtained ambulatory splint is produced which allows the limb to be used and greatly improves its nutrition. One can scarcely enter any ward without seeing some patients being treated by one or other of Major Sinclair's original methods of extension.

We are, Sir, yours faithfully,

JAMES TAYLOR, Major, R.A.M.C.,
District Consulting Surgeon, Aldershot Command;
W. S. EDMOND, Major, R.A.M.C.,

Dec. 23rd, 1918. Surgeon in Charge, Cambridge Hospital.

THE CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—For upwards of 20 years I have on several occasions insisted that the appalling prevalence of dental caries and "adenoids" in this country is due to remedial dietetic causes. It was therefore with great interest that I read Major W. E. Nickolls Dunn's letter in your issue of Dec. 21st, calling attention to this matter. I have again and again referred to the prosaic fact that there are among the inhabitants of this country some 200 million carious teeth, as many alveolar abscesses (pyorrhoea alveolaris), and some 30 million root abscesses—for the most part preventable by the simplest possible means. Well may Major Dunn exclaim that it "is impossible to exaggerate the state of the teeth in this country." It constitutes, indeed, a national disgrace. Dr. Sim Wallace has time after time debated this matter with me, and we have long felt that the remedy can only come through the medical profession.

Three great problems confront the Ministry of Health—the problems of food, housing, and venereal diseases—all, I believe, capable of solution by the application of common

sense principles. Serious as are the two latter problems, I place the food problem first, convinced, as I am, that it is the most urgent, and that more preventable disease is due to faulty eating and drinking than to any other cause.

I am, Sir, yours faithfully,

Cavendish-square, W., Dec. 22nd, 1918. HARRY CAMPBELL.

To the Editor of THE LANCET.

SIR,—Like your correspondent Major Nickolls Dunn (THE LANCET, Dec. 21st), I have come to the conclusion that Dr. Sim Wallace's main contentions are demonstrably true, and that the three articles mentioned by Major Dunn are the main offenders in the production of dental caries. With the relaxation of the stringency in food that will come about within the next few months old habits of diet will be returned to, therefore now is the time to act.

The association of which I am acting chairman is attempting by means of lectures and publications to bring the facts before the public, but until the medical profession and the Government act little progress can be made against the habits of a generation. The age at which solid food should be given, its character, when flesh food should be added, and when it should be given in pieces for mastication are instances in which medical practice differs widely. Can it be doubted that the formation of the jaws and the position and caries-resisting power of the teeth are affected by such matters? And there are many reasons for believing that adenoids and enlarged tonsils are due to food factors.

I am, Sir, yours faithfully,

H. BECKETT OVERY, M.D., F.R.C.S.,
Acting Chairman, National Food Reform Association.
Dec. 31st, 1918.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

To the Editor of THE LANCET.

SIR,—The Medical Officers of Schools Association, which has been established for 34 years, is now desirous of compiling a register of all medical men and women whose professional services are in any way employed in connexion with the hygienic care of schools or colleges. The association would be greatly aided if such members of the profession would forward a postcard with their name, residence, and status in relation to school hygiene on it to the honorary secretaries at 11, Chandos-street, Cavendish-square, W. 1. They would also be obliged if their correspondents would add the names of any professional neighbours so engaged, but at present absent on public service.

I am, Sir, yours faithfully,

G. CHAIKIN,
Hon. Secretary.
Dec. 30th, 1918.

THE SERVICES.

ARMY MEDICAL SERVICE.

Temp. Col. O. Richards relinquishes his commission.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. L. A. Mitchell is placed temporarily on the half-pay list. Capt. W. P. MacArthur to be acting Lieutenant-Colonel whilst specially employed.

Capt. G. G. Collett relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major.

Temp. Major P. Hamill (Captain, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

Temp. Capt. A. G. MacLeod, C.A.M.C., to be acting Major while employed as S.M.O.

Temporary Lieutenants to be temporary Captains: B. W. Skinner, D. McCormack, A. S. Moorhead, R. F. Buckler.

Temporary honorary Lieutenants to be temporary honorary Captains: O. H. Stansfield, M. Bronk.

Officers relinquishing their commissions: Temp. Majors W. D. Anderson, R. Dick; Temp. Capt. F. L. Underwood, G. D. Laing, J. Howe, J. L. Digby, G. B. Lindsay, B. W. Cohen, W. F. H. Ives, J. L. Falconer, M. A. Spotswood, S. Robson, P. P. Warren, E. L. Matthew, E. B. T. Nuthall, R. Wilson, W. L. Dibb, W. G. L. Wambeck, C. T. M. Flwright, T. Duncan, H. W. Barber, J. B. C. Brockwell, E. A. Peters, and E. O'D. Graham and V. T. W. Eagles (on account of ill-health contracted on active service, and retain the rank of Captain); Temp. hon. Capt. S. A. Henry (on ceasing to be employed with St. John Ambulance Brigade Hospital); S. Alexander, A. G. Harvey, F. W. Lyle, A. Chance, F. B. Julian, T. J. Ryan, J. A. Wood, J. O. Osburne, C. W. B. Littlejohn, S. N. Babington, I. M. Swanepoel, J. C. Watt, W. Mackenzie, H. S. Turner, J. Ellenbogen, C. O. Stallybrass, A. F. G. Kerr; Temp. Lieuts. A. N. Symons, N. J. McCaskie, C. P. Lankester, G. F. N. Taylor, A. J. Watt, J. B. Minford, J. Morton, E. W. Whiting, B. Magoveny, H. J. Villiers, A. G. Heron, A. W. H. Cheyne.

Canadian Army Medical Corps.

Temp. Lieut.-Col. W. H. Delaney to be temporary Colonel. Temporary Captains to be acting Majors: R. M. Fergusson, while employed at a Stationary Hospital; C. E. Preston, while employed as Surgeon, No. 15 Canadian General Hospital, Taplow; F. W. Blake-man, whilst employed at No. 5 Canadian General Hospital.

Canadian Army Dental Corps.

Temp. Lieut. C. C. Graham to be temporary Captain.

SPECIAL RESERVE OF OFFICERS.

Lieutenants to be Captains: N. H. S. Maelzer, W. H. Rowden, J. Thompson, G. B. Birkett, G. R. Sharp, F. L. Richard, C. H. Warner, F. Cameron, A. Wingfield, J. L. D. Buxton, E. P. N. Creagh, J. A. Stewart, T. P. Lloyd.

Cpts. D. Laughlin and E. R. Chambers relinquish their commissions on account of ill-health contracted on active service and retain the rank of Captain.

To be Lieutenants: W. E. P. Briggs (from Manchester University Contingent, O.T.C.), G. Winter.

TERRITORIAL FORCE.

Capt. (acting Major) T. H. Richmond to be acting Lieutenant-Colonel whilst specially employed.

The undermentioned are seconded for service with the R.A.F.: Majors W. G. Mitchell, A. H. Hogarth; Cpts. W. H. Bennett, D. Cameron, J. H. Chauncy, J. P. N. Casey, C. O. Fitzgerald, O. Gleeson, J. J. C. Hamilton, J. M. Kirkness, F. C. Kempson, Andrew MacLennan, J. A. Parsons, F. Roberts, A. Scott-Turner, F. J. P. Saunders, H. J. Shanley, E. M. S. Turner, N. R. Williamson, C. Webb, A. Sutcliffe.

5th London General Hospital: Capt. J. M. Wyatt is seconded for service with the R.A.F.

1st London Sanitary Company: Capt. E. W. Gregory is seconded for service with the R.A.F. Lieut. A. G. Harrington to be Captain and to remain seconded.

TERRITORIAL FORCE RESERVE.

Major W. B. Armstrong, from Attached to Units other than Medical Units, to be Major.

Capt. (Bt. Major) W. J. Wilson, from List of Officers Supernumerary for Service with O.T.C., to be Captain.

Cpts. D. Davidson and T. Higson, from Attached to Units other than Medical Units, to be Captains.

Cpts. R. Hitchings and A. T. Swan, from the General List, to be Captains.

Capt. (acting Major) F. Wigglesworth, from 1st West Riding Field Ambulance, to be Captain.

Cpts. W. J. Phillips and G. Chandler, from Attached to Units other than Medical Units, to be Captains.

Lieut.-Col. J. S. Warrack, from Home Counties Casualty Clearing Station, to be Lieutenant-Colonel.

Capt. (acting Major) W. Brander, from 3rd East Anglian Field Ambulance, to be Captain.

Capt. (acting Major) S. J. Clegg, from Northern Division Sanitary Section, to be Captain.

Capt. (acting Major) W. H. Davison, from South Midland Division Sanitary Section, to be Captain.

Capt. (acting Major) N. M. Fergusson, from Attached to Units other than Medical Units, to be Captain.

Capt. I. C. Keir, from 1st South-Western Mounted Brigade Field Ambulance, to be Captain.

Capt. J. J. S. Lucas, from 2nd Southern General Hospital, to be Captain.

Capt. E. Hulme, from 2nd East Lancashire Field Ambulance, to be Captain.

Capt. W. C. F. Harland, from attached to Units other than Medical Units, to be Captain.

Capt. D. M. Johnston, from 1st Home Counties Field Ambulance, to be Captain.

Capt. W. Smith, from 2nd Northumberland Field Ambulance, to be Captain.

Capt. (acting Lieut.-Col.) G. C. E. Simpson, from West Lancashire Casualty Clearing Station, to be Captain.

Capt. D. S. Sutherland, from 1st London Field Ambulance, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—The undermentioned are granted temporary commissions:—As Captains: G. Sparrow (temp. Surg., R.N.), C. C. O'Malley (temp. Surg., R.N.). As Lieutenants: W. J. S. Cameron.

Dental Branch.—L. C. W. Balls is granted a temporary commission as Lieutenant.

DONATIONS AND BEQUESTS.—By the will of the late Lord Rhonda, Gonville and Caius College, Cambridge, and King Edward VII. Hospital, Cardiff, will each receive £20,000.

IN THE ORDER OF THE INDIAN EMPIRE. Lieutenant-Colonel John Telfer Calvert, I.M.S., principal of the Medical College of Calcutta; Major John Hanna Murray, I.M.S.; Lieutenant-Colonel F. E. Swinton, I.M.S., medical store-keeper, Bombay; and Lieutenant-Colonel J. C. Lamont, I.M.S. (ret.), professor of anatomy, Medical College, Lahore, India, receive Companionships. Mr. J. D. Price, officiating civil surgeon at Nowgong, Assam, has received the Kaiser-i-Hind Medal of the First Class.

THE ADVISORY COMMITTEE ON T.N.T. POISONING.—The Advisory Committee on T.N.T. Poisoning have asked the Minister of Munitions to express to Dr. J. B. G. Skelton, of the Welfare and Health Section of the Ministry, their gratitude for the valuable work which has been carried out amongst the workers in the T.N.T. factories. The Minister of Munitions states that the success which has followed material dependence on the medical profession has been mainly due to Dr. Skelton's unselfish and loyal service.

THE LANCET, VOL. II., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET which was completed with the issue of Dec. 28th, 1918, is in preparation. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—T. A. Jordan (Sects. I. and II.), Manchester; J. E. Nicole (Sects. I. and II.), Westminster Hosp.; S. H. Robinson (Sect. I.), Guy's Hosp.; G. E. Spero (Sect. II.), London Hosp.; and C. de B. Thomson (Sect. I.), Middlesex Hosp.

Medicine.—T. A. Jordan (Sect. II.), Manchester; F. W. Kemp (Sect. II.), Charing Cross Hosp.; and J. E. Nicole (Sect. II.), Westminster Hosp.

Forensic Medicine.—W. S. Hughes, Charing Cross Hosp.; J. Kershaw, Manchester; and S. Robinson, St. Thomas's Hosp.

Midwifery.—J. Kershaw, Manchester.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: T. A. Jordan, J. E. Nicole, and S. Robinson.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics, Jurisprudence and Hygiene, Pathology.—Leonard Abrahamson, Robert Dormer, Salmon Louis Feldman, William Bernard Joseph Pemberton, Maurice Nurock, Johannes Martinus Benjamin de Wet, Wouter De Vos Scholtz, Johannes Philippus de Villiers, Doris Louisa Graham, Joseph Ballantyne Maguire, and Elsie Anna Burns.

Materia Medica and Therapeutics, Jurisprudence and Hygiene only.—Percival Israel Levitt.

Pathology (in completion).—Gerald FitzMaurice Keatings and Samuel Reginald Hill.

Part II., Medicine (M.B.).—William Philip Biford, Thomas Mulock-Bentley, Robert Bevan Nangle Smartt, Herbert Stratford Collins, William Alfred Shannon, Becher FitzJames Haythornthwaite, Cecil Joseph Quinlan, James Edward Jameson, Frederick John Dymoke, Ethel Marjorie Luce, and Johannes Tobias Mynhardt.

Surgery (B.Ch.).—John Henry Coolican, William Philip Biford, William Sweetman, Louis John Patrick Murphy, William Alfred Shannon, Alewyn Johannes Vorster, Eric Reginald Tivy, Kenneth MacGregor Greer, Ethel Marjorie Luce, and Eric James Lyndon.

Midwifery (B.A.O.).—Victor Millington Syngé, Henry Blundell Van der Merwe, Gertrude Rice, John Charles Joseph Callanan, Alfred Leopold Wilson, Johannes Tobias Mynhardt, Albert Hugh Thompson, Louis John Patrick Murphy, William Joseph Hogan, Richard William Shaw, William Andrew Byrn, James Sinclair Quin, Gerald FitzMaurice Keatings, Samuel John Laverty, Thomas James Russell Warren, and Cecil Joseph Quinlan.

DIPLOMA IN PUBLIC HEALTH.

Part I., Bacteriology, Pathology, Chemistry, Physics, and Meteorology.—John Speares, Alexander Hugh Blaxell Pearce, Joseph Warwick Bigger, and Harold Sanderson Sugars.

Part II., Sanitary Engineering, Vital Statistics and Public Health, Hygiene, and Epidemiology.—Joseph Warwick Bigger, Edgar Ormond Bowie, James Beckett, Alexander Kirkpatrick Cosgrave, and Alexander Hugh Blaxell Pearce.

At the meeting of the Society for the Study of Inebriety, to be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, Jan. 14th, at 4 P.M., Lord d'Abernon will deliver an address on the Scientific Basis of Drink Control.

NEW REGULATIONS FOR THE SUPPLY OF CREAM.

With a view to relieving in some measure the present shortage of milk, the Food Controller has issued a new Order, the Cream Order, 1918, which places further restrictions on the supply of cream. The Order will come into force on Monday next, Jan. 6th, and will further restrict the sale of cream. Cream for children under 5 will be limited to a maximum of half a pint per week. To obtain cream for such children applications should be made to the local Food Committee for a permit, which should be lodged with the retailer. In the case of invalids, permits for cream may be granted as an alternative to butter and margarine. These will be granted by the Food Committee on a medical certificate in the case of invalids suffering from certain specified diseases. Applications in respect of invalids suffering from other diseases must be submitted by the Food Committee for special authorisation from the Medical Section of the

Ministry of Food. Such applications must be accompanied by a medical certificate giving specific reasons why cream is recommended. Directions as to cases in which applications for cream may be entertained by the Food Committees are being furnished to medical practitioners for their guidance. Applications in respect of inmates of institutions must be made by the head of the institution on their behalf, and all existing authorities for cream in the hands of consumers and retailers will cease to be valid and fresh applications will have to be made.

Sir Robert Armstrong-Jones will deliver the Gresham lectures on Physic at Gresham College on Tuesday, Wednesday, Thursday, and Friday, Jan. 14th to 17th, each day at 6 o'clock. On the first day (Tuesday) the subject of the lecture will be "Heredity," with special application to mental and nervous diseases; Wednesday, "Alcohol: its Use and Abuse"; Thursday, "Venereal Diseases: their Consequences and their Control"; Friday, "Influenza and its Results," especially in regard to the measures taken to combat its spread.

METROPOLITAN ASYLUMS BOARD: DIPLOMA IN PUBLIC HEALTH.—A course of lectures and demonstrations in hospital administration, extending over three months, will be given at the Western Hospital, Seagrave-road, Fulham, London, S.W., by Dr. R. M. Bruce, medical superintendent, on Tuesdays and Fridays, at 5 P.M., beginning Tuesday, Jan. 7th. The fee for the course is £33s., payable to the Clerk to the Metropolitan Asylums Board, Embankment, London, E.C. 4.

THE ROYAL INSTITUTE OF PUBLIC HEALTH.—In connexion with the work of the Venereal Diseases Department of the above institute a special conference will be held on Wednesday next, Jan. 8th, at 4 P.M., when Professor J. G. Adami, M.D., F.R.S., Colonel, C.A.M.C., will open a discussion on the Prevention and Arrest of Venereal Disease in the Army. The chair will be taken by Lord Sydenham, and amongst those who will take part in the discussion are: Dr. Mary Scharlieb, Colonel M. A. De Laney, Liaison Officer, U.S. Army; Colonel William F. Snow, M.C., U.S.A.; Lieutenant-Colonel George Walker, M.C., U.S.A.; Colonel Hugh H. Young, Chief of the Division of Urology, American Expeditionary Force; Lieutenant-Colonel L. W. Harrison, D.S.O., medical officer in charge, Rochester Row Military Hospital.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Dec. 19th, with Sir Francis H. Champneys in the chair. A midwife was struck off the Roll, the following charges amongst others having been brought forward:—

Neglecting to wash the patient, as required by Rule E.8, at any time after the day of the confinement; neglecting to take and record the pulse and temperature of the patient at each visit, as required by Rule E.14; entering on her records false statements of the pulse and temperature of the patient; neglecting to wash the patient on the termination of the labour, as required by Rule E.9; neglecting to remove the soiled linen, &c., used at the confinement from the neighbourhood of the patient, as required by Rule E.11; and endeavouring to persuade the patient to give to the officers of the local supervising authority false information regarding the number of her visits and her compliance with Rule E.14. That when attending her patients the midwife did not on each occasion wear a clean dress of washable material, as required by Rule E.2, and she neglected to afford to the inspector of midwives of the local supervising authority reasonable facilities for an inspection of her methods of practice, and more particularly she was guilty of obstructing the inspector in carrying out such inspection.

At a meeting held on Dec. 19th a letter was considered from the chairman of the Standing Committee of the County Nursing Associations of the Queen Victoria's Jubilee Institute for Nurses asking the Board to hold more frequent examinations in London. The Board decided that the reply be that the Board is unable to see its way to comply with the request of the Standing Committee of the County Nursing Associations of the Queen Victoria's Jubilee Institute for Nurses.—A letter was considered from Dr. Herbert Williamson, physician-accoucheur, St. Bartholomew's Hospital, with reference to the admission to the Board's examination of a nurse of Danish nationality. The Board directed that Dr. Williamson be informed that, having regard to the Board's resolution on the subject, the Board regrets its inability to make an exception in any particular case.—The Board having considered draft rules requiring a midwife to notify the local supervising authority when she has advised artificial feeding, decided that the rules as amended be approved, subject to the approval of the Privy Council.—The Board having considered draft rules regulating the payment of expenses incurred by members in respect of their attendance at meetings of the Board, decided that the rules as amended be approved, subject to approval by the Privy Council.—The Board having considered draft rules deciding the conditions under which midwives may be suspended from practice in penal cases by (a) the Board, (b) the local supervising authority, decided that the rules be approved, subject to approval by the Privy Council.

Appointments.

Low, V. WARREN, C.B., has been appointed a Member of the Court of Examiners of the Royal College of Surgeons of England.

MARRING, THOMAS DAVIS, M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., Medical Officer for the Weymouth District.

The following have been appointed Surgeons under the Factory and Workshop Acts: WADE, N. N., M.D. Edin. (Risca District of Monmouth); HULL, G. E., L.A.H. Dub. (Rogerstone District of Monmouth); ROBERTSON, J. M., M.B., C.M. Glasg. (Biggar District of Lanark); REES, M. W., L.R.C.P. & S. Edin. (Llanfair Caereinion District of Montgomery).

Vacancies.

For further information refer to the advertisement columns.

Aberystwyth Infirmary & Cardiganshire General Hospital.—H.S. £200.

Aylesbury, Bucks County Asylum.—Asst. M.O. £350.

Bedford County Hospital.—H.S.

Birmingham General Dispensary.—Res. M.O. £360.

Bolingbroke Hospital, Wandasworth Common, S.W.—Res. M.O. £200.

Bradford Royal Infirmary.—H.S.

Bristol General Hospital.—Sen. H.S. £300.

Chichester, Royal West Sussex Hospital.—H.S. £180.

Edinburgh, General Diseases Scheme.—Female Asst. M.O. £400.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female

Obst. Asst. £50.

Exeter City Mental Hospital, Digby, near Exeter.—Asst. M.O. £300.

Glanmorang County Asylum, Bridgend.—Temp. Asst. M.O. £86s. per wk.

Greenock Corporation.—Female Med. Prac. £350.

Guildford, Royal Surrey County Hospital.—H.S. £250.

Heltingly, Sussex, East Sussex County Asylum.—Temp. Asst. M.O.

7 gs. per week.

Hospital for Sick Children, Great Ormond-street, London.—H.S. £100.

Huddersfield County Borough Education Authority.—Asst. School

M.O. £350.

London Homeopathic Hospital, Great Ormond-street and Queen-square,

W.C.—R.M.O. £80.

Manchester, Ancoats Hospital, Mill-street.—Hon. P.

Manchester Royal Infirmary and Dispensary.—Hon. Asst. Gyn. S.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—S.

£200.

National Hospital for Diseases of the Heart.—Non-Res. M.O.

National Orthopaedic Hospital.—Res. H.S. £100.

Norwich, Norfolk and Norwich Hospital.—H.P. £250.

Plymouth, South Devon and East Cornwall Hospital.—H.S. £250.

Putney Hospital, Lower Common, S.W.—Res. M.O. £150.

Rochdale Infirmary and Dispensary.—Jun. H.S. £100.

Rotherham Hospital.—Sen. H.S. £250.

St. Mark's Hospital, Gray's Inn-road, W.C.—Sen. Res. M.O. £200.

St. Mark's Hospital for Cancer, Fistula, and Other Diseases of the

Rectum, City-road, London, E.C.—H.S. £250.

Shrewsbury County Asylum.—Two Locum Tenentes. 7 gs. per week.

Southampton Free Eye Hospital.—Asst. Oph. Surg. £100.

Westmorland Sanatorium, Meathop, Grange-over-Sands.—Asst. M.O.

£300.

Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.

Wolverhampton and Staffordshire General Hospital.—Senior Student

as Assistant. Also Res. M.O. £200. Also H.S. £200.

The Chief Inspector of Factories, Home Office, S.W., gives notice of

vacancies for Certifying Surgeons under the Factory and Workshop

Acts at Rochdale, Lancs; and at Shrewsbury, Shropshire.

The Home Secretary gives notice of a vacancy for a Medical Referee

under the Workmen's Compensation Act, 1906, for the Alfreton,

Buxton, Chapel-en-le-Frith and New Mills, and Chesterfield

County Courts in Circuit No. 19. Applications should be addressed

to the Private Secretary, Home Office, London, S.W., not later than

Jan. 15th, 1919.

Births, Marriages, and Deaths.

BIRTHS

HANCE.—On Dec. 23rd, 1918, at Bombay, India, Catherine (née Leonard), the wife of Major J. Bennett Hance, I.M.S., of a daughter.

MARRIAGES

GIBSON—FLETCHER.—On Dec. 28th, 1918, at the Parish Church, Standish, Lancashire, Major Richard E. Gibson, O.B.E., R.A.M.C., to Daphne Margaret, youngest daughter of the late Ven. R. C. Fletcher, Archdeacon of Blackburn, Rector of Chorley.

DEATHS

BENNETT.—On Dec. 28th, 1918, at Paignton, suddenly, Lawrence H. Bennett, M.B. Oxon.

GUTHRIE.—On Dec. 24th, 1918, from injuries received in an accident, Leonard George Guthrie, M.A., D.M. Oxon., F.R.C.P., Upper Berkeley-street, Portman-square, W., in his 61st year.

SHELMERDINE.—On Dec. 28th, 1918, at Torleigh, St. Mary Church, Herbert Shelmerdine, M.B., in his 59th year.

TURNER.—On Dec. 24th, 1918, instantaneously, the result of a lift accident, Douglas Hamilton, younger son of Captain William Turner, R.A.M.C.T. M.S., F.R.C.S., of 92, Harley-street, W.1, aged 8 years 10 months.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

MEETINGS OF SECTIONS.

Thursday, Jan. 9th.

NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnside): at 8.30 P.M.

Papers:

Captain T. A. Ross: Interrelations of Peace and War Neuroses.

Lieut.-Colonel A. F. Hurst and Major Symms: Hysterical Element in Organic Nervous Injuries and Diseases (with cinematographic demonstration).

Friday, Jan. 10th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.

Paper:

Lieut.-Colonel Martin Flack, R.A.F.: Some Simple Tests for Physical Efficiency.

Those Members of the Section who desire to dine after the Meeting are requested to send in their names to Captain Greenwood, 7, Northumberland-street, W.C. 2, not later than Jan. 8th.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

RÖNTGEN SOCIETY, at the Royal Society of Arts, 18, John-street, Strand, W.C.

TUESDAY, Jan. 7th.—8.15 P.M., General Meeting. Paper: Dr. H. S. Allen: Electrical Changes produced by Light.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c. POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 P.M., Wednesday, Friday and Saturday also at 10 A.M.

(Details of Post-Graduate Course were given in issue of Nov. 30th, 1918.)

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. D. E. Anderson, Lond.;

Sir R. Armstrong-Jones, Lond.;

Messrs. Abdulla and Co., Lond.;

Col. J. G. Adami, A.D.M.S.;

Mr. J. H. Allan, Liverpool; Major

T. M. Allison, R.A.M.C.(T.)

B.—Dr. F. J. H. Bateman, Lond.;

Dr. J. Brownlee, Lond.; Prof.

W. M. Bayliss, Lond.; Dr. J. W. H.

Bigger, Sheffield; Mr. W. H.

Bowen, Cambridge; Dr. A. G.

Bateman, Lond.

C.—Lt.-Col. J. M. Cotterill, C.M.G.,

R.A.M.C.; Capt. A. B. Ohlholm,

R.A.M.C.; Chicago School of

Sanitary Instruction; Canadian

War Records, Lond., Officer-in-

Charge.

D.—Lt.-Col. J. F. Donegan, C.B.,

R.A.M.C.; Dr. V. Dickinson,

Lond.; Capt. F. Dillon, R.A.M.C.

E.—Mr. W. H. Evans, Lond.; Capt.

Bagleton.

F.—Factories, Chief Inspector of,

Lond.; Dr. J. J. L. Ferris,

Baguley; Capt. W. Fletcher,

R.A.M.C.; Capt. A. Fleming,

R.A.M.C.; Col. N. Faichnie,

A.M.S.

G.—Capt. J. Geoghegan, R.A.M.C.;

Lieut. J. H. P. Graham,

R.A.M.C.(S.R.); Mr. W. Glenie-

ster, Aylesbury.

H.—Dr. J. Hodson, Edinburgh;

Capt. C. W. Hutt, R.A.M.C.;

Capt. J. A. Hadfield, R.A.M.C.;

Prof. F. Hobday, Mr. P. B.

Hoerber, New York; Mrs. B.

Hancock, Lond.; Mr. D. Harmer,

Lond.; Capt. A. Harwood.

I.—Dr. S. T. Irwin, Belfast.

K.—Dr. T. N. Kelyack, Lond.;

Miss G. Keith, Lond.; Dr. A. M.

Kennedy, Glasgow.

L.—Local Government Board,

Lond.; Mr. B. M. Little, Lond.;

Mr. B. Lee, Blackrock; Dr. C. E.

Lee, Frimley.

M.—Mr. J. B. Macalpine, Man-

chester; Mr. D. O. McMurtrie,

New York; Ministry of Food,

Lond.; Metropolitan Asylums

Board, Lond., Clerk to the; Lt.-

Col. C. S. Myers, R.A.M.C.; Dr.

F. R. Mallett, Bolton; Miss D.

Macnamara, Riekmanworth;

Dr. R. MacLelland, Matlock;

Medical Officers of Schools Asso-

ciation, Lond., Hon. Sec. of.

N.—Newspaper Proprietors Asso-

ciation, Lond.; National Food

Reform Association, Lond.

O.—Rev. E. G. O'Donoghue, Lond.;

Mr. H. C. Orrin, Lond.; Dr. S. A.

Owen, Epsom; Dr. W. J.

O'Donovan, Lond.; Dr. H. B.

Overy, Lond.

P.—The Pastel Society, Lond.;

Major M. G. Pearson, S.A.M.C.;

Capt. H. Platt, R.A.M.C.(T.);

Mr. L. Paton, Lond.; Mr. O. B.

Price, Orpington; Mr. D'Arcy

Power, Lond.; Dr. H. R. Fren-

tie, Lond.

R.—Mrs. M. F. Rogers, Mussel-

burgh; Royal Institution of

Great Britain, Lond.; Dr. J.

Beld, Lond.; Dr. C. S. Redmond,

Manchester; Röntgen Society,

Lond.; Lt.-Col. J. W. F. Rait,

I.M.S.; Red Cross News Bureau,

Lond.; Mr. P. B. Roth, Lond.

S.—Dr. A. G. Shera, Netley; Col.

A. B. Soltan, C.M.G., A.M.S.;

Dr. H. Sutherland, Tain; Society

for the Study of Inebriety, Lond.;

Société de Biologie, Paris; Mrs.

A. H. Smith; Dr. E. I. Spriggs,

Banff; Mr. H. M. Savery, Bud-

leigh Salterton; Mrs. H. R.

Spurrell, Lond.; Society of

Apothecaries of London; Dr.

J. H. Sequeira, Lond.; Mr. J. F.

Stuart, Bournemouth; Mr. C. C.

Smith, Sheffield.

T.—Major J. Taylor, R.A.M.C.;

Dr. J. Taylor, Lond.

V.—Dr. F. Villy, Kelghley.

W.—Dr. W. Watson, Glasgow;

Major W. J. Wilson, R.A.M.C.;

Sir William Whitla, Belfast; Dr.

F. G. Wallace, Lond.; Dr. F. J.

Waldo, Lond.; West London

Hospital Post-Graduate College,

Lond.; Mr. B. H. Worth, Lond.;

Mr. A. Watson, Banff; War

Emergency Fund, Lond., Treas-

urer of.

Y.—Mr. E. Yeates.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Notes, Short Comments, and Answers to Correspondents.

HOSPITALS AND DISPENSARIES IN INDIA, 1917-18.

In the *United Provinces* there was a severe visitation of plague, which in the epidemic year reckoned from July 1st, 1917, to June 30th, 1918, caused 173,881 deaths, nearly double the mortality of the preceding year, and greater than in any year since 1910-11; it reached its maximum in March (41,759 deaths), and then rapidly decreased, the June deaths numbering only 566. Rat destruction gave very satisfactory results, and evacuation of infected villages is increasing in popularity with the inhabitants. Colonel C. Mactaggart, C.I.E., I.M.S., refers to the good work done by the Lucknow Anti-tuberculosis League by means of magic lantern lectures, pictorial posters, and distribution of pamphlets on the subject among the clerical establishments in various offices.

In the report on hospitals and dispensaries in *Burma* Colonel P. C. H. Strickland, I.M.S., refers to the difference in small-pox mortality among vaccinated and unvaccinated persons; 3 out of 126 vaccinated cases were fatal, while out of 71 unvaccinated cases 16 were fatal, the respective percentages being 2.38 and 22.5. Ten dispensaries had to be closed on account of the war.

In the *North-West Frontier Province* a total of 12,650 patients were treated in hospital, showing a decrease of 235 on the preceding year, four dispensaries and two hospitals having been closed, though, on the other hand, three new hospitals have been opened. It is remarked by Lieutenant-Colonel T. W. Irvine, I.M.S., the chief medical officer of the province, that "the total number of in-patients is always disappointing, and has been remarked on repeatedly." Accommodation is provided for 901 patients, but the average daily number under treatment was only 435. Lieutenant-Colonel Irvine considers that this shows that "the public not only doubt the skill of the medical staff, but have other and good reasons for not availing themselves to a much greater degree of this accommodation." Such a statement appears to require explanation.

THE TREATMENT OF SCURVY.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 21st last Dr. Muir Evans quotes a prescription, published in 1676, for making medicated beer, which includes horse-radish and scurvy-grass. The same use of horse-radish was recommended still earlier by Dr. John Woodall in "The Surgeon's Mate" (published in 1617), where he says that "Horse-radish sauce alone, or mixed with beer, is exceeding good." Dr. Woodall suggests also using herbs, including scurvy-grass and sorrel, in new milk or whey. There is an early tribute to the usefulness of scurvy-grass in the account by Gerrit de Veer of the voyages of Willem Barentz (1594-97).

"There to our great good we went on land, for in that island we found great store of leple leaves (*lepel-bladeren*, spoonwort or scurvy-grass, *Cochlearia officinalis*) which served us exceeding well; and it seemed that God had purposely sent us thither, for as then we had many sick men, and most of us were so troubled with a scouring in our bodies (*schorbok*, scurvy) and were thereby become so weak that we could hardly row, but by means of those leaves we were healed thereof: for that as soon as we had eaten them we were presently eased and healed, whereto we could not choose but wonder, and therefore we gave God great thanks for that and for other his merces showed to us, by his great and unexpected aid lent us in that our dangerous voyage. And so, as I sayd before, we ate them by whole handfuls together, because in Holland we had heard much spoken of their great force; and as then found it to be much more than we expected."

But later Arctic explorers have, I believe, expressed the opinion that sorrel (*Rumex acetosella*) is more effective than scurvy-grass.

I am, Sir, yours faithfully,

Dec. 23rd, 1918.

A. HENDERSON SMITH.

A NASAL DOUCHE.

WE have received from Messrs. Hewlett and Son, Charlotte-street, London, E.C., a neat and convenient form of nasal douche. Its appearance is that of a small bulb-shaped pipette, and it consists of a glass tube about 4 inches long, closed at one end and having at the other end a pear-shaped bulb with an orifice to allow the medicament to escape. The central part of the tube is a bulb into which the medicament is poured through an orifice which also serves as a vent-hole. The closing or unclosing of this hole by the finger controls the flow of the fluid. As the douche is made of toughened glass it can be sterilised by boiling without fear of breakage.

COLONIAL HEALTH REPORTS.

British Guiana.—Mr. G. B. Greene, Assistant Government Secretary, in his report on the Blue-book for 1917, states that the estimated population of the colony on Dec. 31st was 313,999—163,405 males and 150,594 females. The birth- and death-rates per 1000 of the population of the several races representing the community were as follows:—

| Race. | Birth-rate. | Death-rate. | Race. | Birth-rate. | Death-rate. |
|------------------------------------|-------------|-------------|-----------------|-------------|-------------|
| Europeans other than Portuguese... | 9.6 | 13.7 | Chinese ... | 25.6 | 23.5 |
| Portuguese ... | 25.9 | 31.2 | Blacks ... | 27.9 | 29.9 |
| East Indians ... | 27.6 | 33.1 | Mixed races ... | 32.0 | 21.5 |

The number of deaths of children under 1 year of age was 1781, or 199 per 1000 births. The mean rate for the previous five years was 183 per 1000. The six principal causes of death throughout the colony during the past five years are given by the Registrar-General as follows: Bowel complaints (including dysentery, diarrhoea, and enteritis, &c.), 13.4 per cent. of the general mortality; fever (malarial and other), 14.3 per cent.; pneumonia and bronchitis, 12.2 per cent.; kidney diseases, 9.6 per cent.; diseases of early infancy (including premature birth, infantile debility, &c.), 8.9 per cent.; and phthisis and other forms of tuberculosis, 6.3 per cent. Enteric fever is a notifiable disease; during 1917 723 cases were notified, with 123 deaths. Antimalaria and antimosquito measures are being generally and gradually enforced, with visible signs of success. Ankylostomiasis, which has engaged the attention of the medical department for several years, has considerably decreased on the sugar estates; this is attributed to improved sanitary measures and the erection of latrines. The hospitals and asylums of the colony were maintained during the year in their usual efficient condition. There are five public hospitals in the principal centres of population and the outlying districts are served by dispensary hospitals and dispensaries. The immigration law also requires the maintenance of hospitals on every plantation on which there are indentured East Indian labourers, and those institutions are available for the treatment of emergency and pauper cases from the general community. There were 439 patients in the public hospitals at the beginning of the year, and 13,271 were admitted during the year; there were 1413 deaths. In addition to those admitted to hospital outdoor treatment was given to 55,388 persons. At the Leper Asylum there were 297 patients when the year began—205 males and 92 females. During the year 71 were admitted.

Enquirer.—It has been explained in our columns, but we will make an opportunity for repeating the information.

THE price of the book entitled "Married Love," reviewed in THE LANCET of Dec. 28th, 1918, is now 6s.

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At the last meeting of the Taunton town council it was decided to appoint Dr. H. J. Alford consulting medical officer of health and school medical officer at a salary of £350 per annum.

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A Final Contribution

THE STUDY OF SHELL SHOCK.¹

BEING A CONSIDERATION OF UNSETTLED POINTS
NEEDING INVESTIGATION.

By CHARLES S. MYERS, M.D., Sc.D., F.R.S.,
LIEUTENANT-COLONEL, R.A.M.C. (T.C.).

No medical officers have felt the strain of war more severely than those engaged in the treatment of functional nervous disorders. Both in this country and overseas their time and energies have been so fully occupied that any systematic research in their special sphere of work has been generally out of the question. But now, perhaps, this tension may be relieved; and inasmuch as, even at this late hour, it is still possible to investigate various problems which have arisen during the past four years, I have endeavoured in this paper to draw attention to those which seem to me of the greatest importance. If, perchance, there be any who have relevant data which are too scanty to be published separately and would otherwise lie hidden away in note-books, I shall be happy to receive them, and will, of course, be careful to acknowledge their source in any compilation which can be usefully made from them.

ETIOLOGY.

There is a general agreement that the war neuroses are to be regarded as the result of functional dissociation arising from the loss of the highest controlling mental functions. Yet considerable controversy exists as to how those controlling functions are lost, and precisely what occurs when they are lost. Some, for example, consider that functional nervous disorders are dependent on increased suggestibility arising from fear, horror, or other emotional or fatiguing conditions; while others maintain that, quite apart from suggestion, emotional conflict or excitement is capable of producing functional disorders. Some have distinguished a so-called commotional from an emotional syndrome; others have insisted that whether a man has been buried in a trench or has seen his best friend's brains scattered before him the functional symptoms are identical. All now agree that mere concussion or the poisonous action of carbon monoxide or other noxious gases does not necessarily give rise to functional nervous disturbance.

Many neurologists hold that the effects of suggestion and of functional disturbance are limited to phenomena which can be imitated voluntarily by the patient; they accordingly limit functional disturbances to those which can as well be produced by malingering. Hence local or general sweating, vaso-motor disturbances, changes in the reflexes or in muscular tone, and any disorders of movement which do not disappear during sleep or under an anæsthetic cannot, according to this view, be due to suggestion and cannot be classed as functional disorders.

But cases of contracture occur which clearly cannot be imitated voluntarily; so do, more seldom, cases of spasmodic movement and of incoördination. The persistence of contracture or of spasmodic movement is likewise unimitable by volition. Moreover, every physician of experience must have met with patients suffering from functional deafness, whose sleep has not been in the least disturbed by the loudest noises, and they must have seen contractures and spasmodic movements persisting during sleep and during at least the first stages of chloroform anæsthesia. We may recall the case of persistent contracture described by G. Ballet,² which was carefully tested during sleep by means of stamp-paper gummed to the affected region.

It has, however, been objected that in such exceptional cases of contracture the possibility of joint adhesions has not been considered, or that the contractures are due to peripheral causes and are therefore to be placed in a special group of "reflex contractures." In this country, at least, I think it difficult to exaggerate the harm that has arisen

from an uncritical acceptance of Babinski's hypothesis of "reflex" paralysis or contracture. I have met with expert neurologists who, on diagnosing a case as belonging to the "reflex" group, have at once regarded it as "organic" and have refused it admission to one of the special hospitals for functional disorders. For my part, I have never seen such a case in which the paralysis or contracture has not been cured by psycho-therapeutic measures (aided, sometimes, by manipulation under an anæsthetic), and the other so-called reflex symptoms (loss of muscular tone, coldness, sweating, &c.) have not disappeared *pari passu* with the regain of normal voluntary movement.

Chief Topics for Investigation.

There are, then, three main topics for investigation: (1) the existence of distinct commotional and emotional syndromes; (2) the justification for limiting the effects of suggestion to volitionally imitable phenomena; (3) the sufficiency of suggestion as an explanation of all functional dissociation.

Of these the first merely requires the collection of observations. My own experience is that in patients who have been exposed to physical violence (i.e., having been buried, knocked over, or lifted in the air), stupor, hyperæsthesia, and spasmodic movements are commoner than in those whose disorder has a purely mental origin. If these differences are confirmed by others their explanation would not be difficult, but at the present moment would be out of place. So, too, it would be inopportune here to consider whether a special kind of commotion—e.g., a fine "molecular" commotion, such as might be produced by moderately short waves of the disturbed air—may ever be directly responsible for functional disorder, producing dissociation through its exhaustive effect on the higher "intellectual" regions or through its excessively stimulant effect on the lower "emotional" regions. In passing, we may note that emotion alone can give rise to increase of pressure and of albumin content, and even, according to some, to leucocytosis in the cerebro-spinal fluid. But fuller observations are needed on this matter.

The second topic suggests a variety of investigations. Can suggestion produce local pallor or blushing? Most experts in hypnosis maintain that local disturbances in blood-supply can be induced by hypnotic suggestion. Some claim even to have produced blisters, but further work under the careful conditions adopted by Captain J. A. Hadfield, R.A.M.C. (then a naval surgeon³) is urgently needed. Similarly in regard to local sweating, &c.

The third topic involves the consideration of the other causes, besides suggestion, which have been advanced as responsible for functional dissociation. Some have thought that an excessive emotional experience may suffice to bring it about. Others have laid stress on the repression of an emotion or instinctive action arising from its conflict with other antagonistic processes, especially with the higher motives of conscience, social sanction, &c. Particular stress has been laid on the conflict of "wishes" on maladaptation to environment, on the fear of death, and on defence mechanisms before an intolerable situation; the object being to bring all the war neuroses under two heads—the "conversion hysterias" and the "anxiety neuroses."

Classification of Main Types of War Neuroses.

With a view to determining the sufficiency of suggestibility as a cause of functional nervous disorders, let us endeavour to classify the main types of the war neuroses, beginning with obviously hysterical, "suggested," cases and passing to those which show more and more clearly the need for other explanations.

1. A highly "nervous" soldier is hit on the forearm by a piece of shell. His arm drops to his side, and the thought at once occurs to him that he has lost the use of it. The entire limb becomes functionally paralysed. Here we have a clear case of suggestion acting under the influence of fear.

2. After an accident in civil life a man had long ago suffered pain or impaired mobility. A slight bruise in the same region on the battle-field produces functional hyperæsthesia or paralysis. The hyperæsthesia gives place to anæsthesia, or with recovery of movement a condition of extreme incoördination ensues. The influence of suggestion

¹ Four previous communications on this subject appeared in THE LANCET of Feb. 13th, 1915 (p. 316), Jan. 8th (p. 65), March 18th (p. 606), Sept. 9th, 1916 (p. 461).

² Cf. Roumy: Rev. Neurol., 1918, xxv., p. 204.

³ Ibid., 1915, xii., p. 767.

⁴ THE LANCET, Nov. 3rd, 1917, p. 878.

is here fairly obvious. The soldier may even admit that the bruise revived the memory of his former accident. But is it necessarily and always true that hyperaesthesia has been converted into anaesthesia by suggestion or that the incoördination can be imitated volitionally?

3. In childhood certain spasmodic movements were temporarily induced by a severe fright. Of this the soldier has lost all memory. Sudden fear in the trenches revives this disordered movement, which persists for many weeks. The influence of suggestion is here less sure. But even if suggestion can explain the origin it cannot account for the long persistence of the movement, which may even continue during sleep. But if (as is usual) it ceases during sleep can it be supposed that each morning on waking the patient receives a fresh suggestion? Do we not gain a clearer insight into the condition by regarding the movement as a dissociated emotional expression inherent in the waking personality of the patient, especially when this view leads us to cure the disorder by reviving in the patient the memory of the original trouble, and thus helping to restore his normal personality?

4. A soldier in previous good health is buried owing to a shell explosion. After a period of stupor or confusion (perhaps preceding, accompanying, or following excitement, depression, or fugue), he "comes round" mute and amnesic, but he has clearly not quite returned to his normal self. Here there is no evidence of suggestion, but it is possible that suggestion may have influenced the patient when the state of confusion or stupor was passing away. By means of hypnosis memories of a patient's thoughts or environment during confusion or stupor may often be recovered. Hypnotic investigation may therefore serve to clear up this point. Yet even if loss of speech had been suggested during recovery from confusion or stupor, suggestion is impotent to explain such a patient's loss of memory. The soldier may confess to having felt some previous fear, but what man has not at some time had that experience in the trenches? There is often no evidence of any mental conflict before or after burial. But he may have been unconsciously repressing some tendency to action. Here hypnosis may again prove of use in revealing the presence of such past conflict or inhibition. It cannot be said that mutism and amnesia are obvious measures of escape from the firing line; and amnesia can only be called a defence mechanism in the sense that, like stupor, it safeguards the patient from suffering further emotion. In such cases, may we not suppose that the shock of an excessive emotion (or commotion) is adequate to produce an abnormal, stuporose, or confused personality, on emergence from which the memories of events relating thereto are necessarily lost, mutism persisting as a piece of dissociated behaviour expressive of the mental disturbance?

5. A soldier suffers pain in one or more limbs consequent on burial or a wound; or the application of a splint to his wounded limb results in prolonged immobility. He gradually develops a functional condition of muscular contraction or paralysis. There is no evidence of suggestion here. The patient is usually quite unable to account for the onset of his condition, but more careful mental exploration⁵ in the waking or hypnotic state is likely to throw light on the matter. Without this exploration all such facile explanations as the wish to escape from an unpleasant situation, the habitual persistence of immobility, the desire for a pension or for discharge from the Army, are scientifically worthless.

6. A soldier has for several months been suffering from self-reproach, owing to some act he has committed; subsequently he develops a functional disorder. For instance, he has shot at the uplifted arm of a surrendering enemy, whose arm drops helpless as he falls to the ground; later the patient's arm is slightly injured, and it becomes completely paralysed. Or he has long worried over past sexual abuse; and on breaking down from the strain of warfare he develops washing-like movements of the hands, symbolic of ridding himself of his impurity. Or he has reproached himself with causing the death of a comrade; and on breaking down he begins to suffer from visual hallucinations of seeing an avenging finger pointing at him, or from auditory hallucinations of hearing an accusing voice, or from the conviction that he has sinned unpardonably, &c. Suggestion

is powerless to account for these various examples of loss of control over bodily or mental processes. They are clearly the result of imperfectly solved conflicts, the more or less repressed, dissociated complex finding expression in motor, sensory, or ideational disorder. For with the exploration of their origin, their explanation to the patient, and his increasingly successful efforts to face and to solve the conflict his troubles come to an end.

But even if we admit that suggestion may act on the involuntary nervous system, that suggestion plays but a small part in the causation of the war neuroses, and that extreme emotion and conflicting complexes are by far their most important determinants, there still remains for consideration to what neural level functional dissociation may extend.

LIMITS OF DISSOCIATION.

Cases frequently occur in which the sudden recovery of lost memory is accompanied not merely by the restoration of speech, not merely by the cessation of spasmodic movements, but also by a marked change in the entire facies of the patient. He not only (as he states) feels, but he also looks, another person. His pupils, pulse-rate, and skin colour regain their normal condition. We may consider their previous abnormal state as due to the persistence of emotional expression, either uncontrolled by, because dissociated from, the normal personality, or belonging to an "ultra-emotional" personality which held sway owing to dissociation of the normal personality.

In the third of these contributions I suggested the general resemblance of certain cases of functional hyperaesthesia to the features of disordered sensibility described in cases of thalamic over-action, where the optic thalamus has been cut off from the normal control exercised by the cerebral cortex. Can the effects of loss of higher control in the war neuroses be similarly manifested in disorder of the sympathetic and reflex systems?

As a rule, the nystagmus, clonus, and rombergism observed in functional disorders are clearly distinguishable from those occurring in organic cases. The nystagmus is rather of the nature of an unsteadiness, the clonus is only obtained at a particular angle of flexion or degree of tension, the rombergism disappears when the patient's attention is distracted from the fear of falling. But everyone with sufficient experience must have occasionally seen cases where these disturbances in a clearly functional case are indistinguishable from truly organic disorders, just as a so-called hysterical convulsion may occasionally be indistinguishable from one due to so-called idiopathic epilepsy.

It is a question of what neural levels may be involved as the result of functional dissociation and loss of control. In his zeal to limit the manifestations of "pithiatism" to the sphere of volitional activity Babinski refuses to believe that the patellar reflex can ever be exaggerated in the functional neuroses; and neurologists holding such views delude themselves by using the epithet "brisk" in place of "exaggerated." But will any dispassionate observer deny that in the war neuroses the knee-jerk can be as exaggerated as in disseminated sclerosis, at the outset of which, by the way, we may recall the appearance of various "functional" disturbances?

The Plantar Reflex.

Let us consider in similar fashion the plantar reflex. In many cases of war neurosis no response is obtainable, or an extension of the toes may result from plantar stimulation, especially when there is well-marked hypertonus of the extensor muscles. Often this extensor response is clearly of a voluntary character, and is associated with strong flexion at the ankle; but in some cases, especially, of course, where the disturbance of consciousness has been severe after burial, a temporary extensor response may be obtained which is indistinguishable from one resulting from organic interference with the pyramidal tract.

The appearance of the extensor response at the close of an epileptic convulsion can only be due to a temporary loss of higher control arising from exhaustion of the inhibiting paths. May not such loss of control sometimes as well arise through functional dissociation? A case has been recently reported to me where the emotional excitement consequent on the revival, during hypnosis, of terrifying repressed incidents of trench warfare, produced a temporary extensor plantar response.

⁵ I prefer the term "exploration" to "analysis," alike because it is more exact, and because it does not imply adhesion to any special "school."

Clearly, further investigation of the plantar response under these and other conditions is urgently needed. In many cases of asymmetric plantar reflex I have found that on the side on which the flexor response is weaker or absent, the knee-jerk and the abdominal reflex are also weaker than on the opposite side, and the cutaneous sensibility is also diminished. Sometimes this association is reversed. These were all purely "functional" cases. Here, again, we need further observations.

Hypothesis of "Reflex" Origin of Certain Disorders.

It is easy to hold to the clear diagrammatic view that all functional neuroses are confined to disturbances of volitional activity, and that where disorders of the reflexes or of the vaso-motor system occur, or where sweating, muscular hypotonus, hyperexcitability, &c., arise, they stamp the case to be one of Babinski's "reflex" cases. Such a simple view, like the old conception of aphasia, overlooks many difficulties. For instance, the so-called reflex phenomena are usually limited to the hands or feet, whatever the site of the wound; they may occur in patients who have not received any wound at all; they are very rare in wounded patients who show no signs of paralysis or contracture; the contracture or paralysis is always amenable to psycho-therapeutic methods. That the vaso-motor and other disturbances do not disappear as rapidly as the paralysis or contraction is no proof that they are produced by reflex causes.

Babinski and Froment have observed⁷ that the abolition of the plantar reflex, the muscular and nervous hyperexcitability, and the slowness of contraction, characteristic of their "reflex" cases, are closely associated with hypothermia. Warming the affected limb abolishes these abnormal conditions. But this is no proof that they are of "reflex" origin. It will be recalled that after the division of afferent nerve fibres in his arm, Head found that a cold day would throw its state back several weeks; the just-acquired epicritic system was depressed, leaving the more primitive protopathic system alone in activity. That is to say, higher and more recently acquired systems of sensibility and reaction are prone to be inhibited or dissociated by cold and to be reintegrated by warmth.

Babinski and Froment have also observed⁸ that in their "reflex" cases of paralysis and contracture chloroform anaesthesia often causes at a certain stage an exaggeration of the tendon reflexes and a well-marked clonus on the affected side, while in healthy people they fail to get any similar appreciable effect. But these observations on the effect of chloroform anaesthesia, as well as those on the effect of warmth on the reflexes, need to be carried out on purely functional cases where there can be no question of "reflex" causes.

Theory of Loss of Some Higher Control or Endocrinic Disturbance.

If we discard the hypothesis of the "reflex" origin of these disorders what explanation can we offer in its stead? On the one hand, we may regard them as consequent on the loss of some higher control, due to emotional disturbance, in which case their limitation to a single region is due to the same cause as the limitation of the voluntary muscular paralysis or contracture. Or, on the other, we may regard them as immediately due to some disorder of the internal secretions, in which case their localised manifestation may be attributed to a local nervous predisposition, either congenital or acquired. Thus, Babinski and Froment⁹ have described certain cases of "reflex" disorder in which a smaller pulse was observed on the affected side. But d'Oelsnitz and Boisseau¹⁰ find that the pulse is small in such cases on the unaffected side also, and they regard the inequality as merely the accentuation of a constitutional or acquired disposition. Boisseau¹¹ observes that after cure the previously smaller pulse (on the affected side) may become larger than that on the opposite side, as the limb becomes warmer and less cyanosed. Clearly further investigations are needed on this subject.

But in either event, whether the so-called "reflex" phenomena are due to loss of higher control or to endocrinic disturbance, emotional disorders are fundamentally responsible for the condition. It only remains to determine

by investigation whether these neural disturbances are produced directly by the emotion or indirectly through the action of the "emotional centres" on the endocrine glands. The one reliable method of determining whether there is any disorder in internal secretion would seem to consist in ascertaining if the patient is unduly susceptible or insensitive to doses of the various glandular extracts, the normal effects of which have been observed by control experiments on healthy persons.

I recall two cases of "shell shock" lying side by side in a clearing station in Flanders. I drew a cross with my finger on the abdomen of each, and obtained in the first a vivid *tache cérébrale*, bright red in colour, while the second yielded an equally vivid image of a cross in white—a phenomenon now recognised to be due to arterial hypotension, such as may arise from adrenal insufficiency. Here, then, conceivably we have two patients respectively suffering from an increased and a diminished tone of the sympathetic system, associated with hyper- and hypo-adrenalism.

In a series of cases examined by me within a few hours after the onset of "shell shock," I could find no sphygmomanometric evidence of increased blood pressure, nor by Fehling's fluid could I detect (save in one case) the slightest trace of sugar even in the first urine passed by these patients since they left the trenches. But sympathetic (or vagal) neuroses may be associated with glandular exhaustion, as well as with glandular over-action.

We need a careful record of the effects of glandular extracts on the emotional condition of cases of war neuroses, and of their effect on the psycho-galvanic reactions and on the reaction times of such patients in association tests.

We are as yet uncertain of the range of action of the sympathetic system, and hence of the extent of its influence in the war neuroses.¹² That it can control the tone of voluntary muscles and affect the steadiness of their contraction there is little doubt. Can it also produce the osteoporosis and muscular atrophy which is observed in many so-called "reflex" cases? Every experienced physician must have occasionally met with a surprising degree of atrophy, alike in cases where there has been some local wound or central concussion and in cases where there has not. This atrophy is often very slow to disappear and in the experience of some is intensified by the returning use of the affected muscles. In certain cases it may arise from vaso-motor disturbances in the cord, induced by the sympathetic system. In addition to the collection of data bearing on this obscure subject we need a series of investigations by modern methods on the electrical reactions of functionally disordered muscles.

In this country, at least, we have been paying so much attention to the mental aspect of the war neuroses that a detailed examination of the accompanying bodily symptoms has been generally neglected. We have yet to ascertain what symptoms usually occur in combination. My own experience, for example, leads me to think that a feeble or absent plantar response is usually associated with a sluggish reaction of the pupils to light and with a tendency to clonus and catatonia, while an unusually brisk flexor plantar response is associated with an extra-active pupil reaction. Rigidity of the limbs often seems to go with hyperaesthesia, weakness with anaesthesia. But much more information is needed on this subject.

A more careful study is also needed of the mental and physical changes occurring during recovery. A most promising subject of investigation would be the changes that terrifying dreams undergo as the patient improves—victory, perhaps, replacing defeat in his dream battles, and civil elements gradually intruding into the dreams of warfare.¹³

TREATMENT.

Those who have had most experience in war neuroses are generally agreed that different physicians attain different degrees of success according to their particular mode of use of the same treatment, and that there is hardly any form of treatment recommended that has not its value in appropriate

⁶ Cf. Dejerine: *Rev. Neur.*, 1915, xxii., No. 19.

⁷ *Hysteria or Pithiatism* (Eng. trans.), 1918, pp. 137, 148, 243, 254 ff.

⁸ *Op. cit.*, pp. 97, 152, 255.

⁹ *Op. cit.*, pp. 126, 261 ff.

¹⁰ *Rev. Neur.*, 1918, xxv., pp. 202 ff. ¹¹ *Ibid.*, 1917, xxiv., 289.

¹² In agreement with Pighini (*Riv. sperim. di Frenet.*, 1917, xlii., 288), Orr and Rows have pointed out (*Brain*, 1918, xli., 19) how intimately the sensori-motor and psychic areas of the cerebral cortex are associated with the sympathetic system, and hence how disordered functional activity of the former may spread through the latter to lower centres in the mid-brain, bulb, and cord, causing dilatation of the pupils and cardio-vascular and other disturbances.

¹³ Cf. D. E. Core: *THE LANCET*, August 10th, 1918, p. 169.

cases. Nearly all of us have learned to ban the routine use of hypnotic drugs; yet in some cases they are unquestionably valuable. An unbiased record is needed of such successes and failures. So, too, we have learned that it is usually disastrous to send a patient to employment or amusement in the hope that he may forget all his worries and solve his conflicts by neglecting them. Yet in some cases this treatment is successful. Again, therefore, we require a careful record of the special determinants which should guide our adoption of the policy of sending mentally uncured neurasthenic cases out of hospital for work or golf.

Experience has also shown that a certain class of patient on recovery of the use of a functionally disabled limb regains his normal mentality and is able to throw off all his psychic disturbance. We need a record of the particular class of case in which this treatment is successful. We need to follow up the cases where the psychic disturbances have been thus neglected or where they have been indirectly treated, and to record, not only the speed, but also the permanence of the cure. When the psychic disturbance is allowed to persist behind the scenes, a showy lightning removal of some bodily functional disability is no true cure at all; the same (or some other) disability will later develop on the slightest provocation. In this connexion I would point out how prone the enthusiastic devotees to one special mode of treatment are to self-deception. I have repeatedly had some method demonstrated to me by its advocate, who has said to me: "See what a marked improvement (say) in stammering has been effected by my treatment," whereas to a dispassionate observer the benefit is almost, if not quite, imperceptible.

In my early experience of shell shock I came to lay great stress on disturbances of personality, and I regarded the amnesia and the bodily disorder, mutism, tremor, incoördination, or spasmodic movement, so commonly observed in cases seen soon after their onset, as the expression of this change of personality, due, like it, to some functional dissociation. Accordingly, I adopted the therapeutic principal of restoring the amnesia with or without the aid of hypnosis; and with the restoration of the amnesia came a restoration of the speech and a resumed control of the bodily movement. Brown,¹⁴ who pursued the same method, came to the conclusion that its efficacy was due not so much to the reintegration of the normal personality as to the working off (abreaction) of the repressed emotion. On the other hand, I appeared to produce as good results by discouraging the patient from giving rein to his emotions during treatment. But clearly a series of carefully controlled investigations is required, in which equal numbers of patients are exhorted to restrain and to express their emotions, and the resulting effects compared. Later I began to treat the bodily disabilities first and the mental disturbances after. We have yet to discover which order of treatment should be adopted in different cases.

Electrotherapy and Hypnosis.

Lastly, there remain for consideration and unbiased investigation the debated values of electrotherapy and hypnosis. Each, if improperly used, has its dangers. I have seen vast numbers of stammerers whose condition, I am convinced, has been produced by the alarm they experienced during the electrical treatment of their previous mutism. I have observed similar results from the application of faradism to other functional motor disorders. Yet I should err in recommending that electrotherapy should never be employed. What we need is an inquiry into the special conditions in which it is beneficial and the particular methods which free it most completely from danger.

Perhaps against no method of treatment has there been greater prejudice than against hypnosis. Early in the war I remember the commandant of one military hospital telling me that he would not in any circumstances countenance its employment because the reputation of his unit would suffer thereby. I have read pages of vituperation against hypnosis written during the war by medical men who had had no personal experience of its use. Imagine what would be our attitude towards a physician who wrote in condemnation of a particular drug which he had never tried. There is, however, an instinctive aversion from the practice of hypnosis which seems to justify almost any attack against it. I recognised it for a long time in myself. Hypnotism savours of the

uncanny, mysterious, and unknown. One's first attempts at hypnotism demand even more self-mastery than one's first sight of an operation.

In these circumstances what an urgent need there is for a dispassionate investigation of its merits and defects, of its uses and abuses! It has been claimed that hypnosis makes the patient for ever dependent on the hypnotiser. We may ask, Must it do so, any more than exploration of the mind in the waking state need make him dependent on the explorer? We need to inquire into the different results in this respect arising according to the different modes of hypnotic treatment adopted. It has been urged that hypnotism gives the patient a temporary relief, like a hypnotic drug or a brandy-and-soda. That, again, must depend on the method of its use.

Here, too, we need careful inquiry into the comparative values of hypnosis as a method of mental reintegration (unearthing repressed complexes) and as a method of somatic reintegration (restoring bodily disabilities by direct suggestion). And, above all, we need an inquiry into the subsequent permanence of cure of those patients who have been treated by either of these two methods with and without hypnotism.

Is it too late to hope that systematic inquiry may yet be begun, at least along some of the lines which I have indicated in this paper? Up to now the field has been almost wholly neglected. Far from being barren, it is rich with the possibilities of valuable results.

INCIDENCE OF *ENTAMOEBA HISTOLYTICA*

AND OTHER INTESTINAL PROTOZOA AMONG 400
HEALTHY NEW ENTRIES TO THE ROYAL NAVY.

By H. A. BAYLIS, M.A.,

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THE large amount of work that has been done in connexion with amoebic dysentery during the last three years has opened up a number of questions, not the least interesting of which is to what extent carriers of *Entamoeba histolytica* exist among the civil population in countries with a temperate climate. Some inquiries on this point have already been made in this country, more particularly by the energetic group of workers at the Liverpool School of Tropical Medicine, who have been engaged primarily in the protozoological investigation of the stools of soldiers invalided from the various fronts.

A summary of the results originally published in their earlier papers,^{1,2,3,4} together with more recent data, was presented by Professor Warrington Yorke⁵ before the Society of Tropical Medicine and Hygiene in June, 1918. An instructive table is there given, in which the results of the examination of various classes of civilians and young recruits are compared with those obtained in the course of routine examinations of convalescent soldiers, both dysenteric and non-dysenteric. Among 450 civilian patients in the Liverpool Royal Infirmary it was found that 1.5 per cent. were carriers of *E. histolytica*, while the examination of 246 children under 12 years old in the Liverpool Children's Infirmary revealed 0.8 per cent. "positive."

The incidence among recruits, 18 to 19 years of age, who had been in a training camp for various periods not exceeding three months, was considerably higher (5.2 per cent.). This may be partly accounted for by the fact that there were also in the camp some men who had returned from the Mediterranean area, and from whom the recruits might have acquired their infections. This hypothesis, however, as the author states, would not altogether account for the facts, since it was proved that many of the recruits had almost certainly been infected before going into the camp.

From these results it appears therefore that in some sections of the civil community in England there may be carriers of amoebic dysentery to the extent of from 1 to 5 per cent. of the apparently healthy population. If this is the case, questions naturally arise as to the wisdom or necessity of spending much time and trouble in discovering and attempting to cure such carriers, as has been done to a great extent among the naval and military forces during the war.

On the publication of the statistics above referred to, it was suggested to the Admiralty by Surgeon Captain P. W. Bassett-Smith, C.B., R.N., that the protozoologist at Haslar

¹⁴ THE LANCET, August 17th, 1918, pp. 198, 199.

should undertake an inquiry on similar lines, making use of new entries to the Navy at Portsmouth as a sample of the material from which the Navy is recruited. Accordingly, instructions were given by the Admiralty, and arrangements having been made through Surgeon Lieutenant-Commander P. Fildes, R.N.V.R., in charge of the laboratory at Haslar, with the medical officers of the Royal Naval Barracks, Portsmouth, and one or two other establishments in the neighbourhood, for supplies of material to be sent to the laboratory, the work was begun in July.

I. Material.

Altogether specimens of the stools of 400 men who had just entered the service were examined.

With the exception of a few from the Royal Marine Barracks, Eastney, and a still smaller number from the Royal Marine Barracks, Porton, all these came from the Royal Naval Barracks, Portsmouth.

The new entries at the barracks were attending in daily batches at the sick bay for throat-swabbing, in accordance with the routine for the detection of carriers of the meningococcus. It was found convenient, therefore, to arrange that five of these men daily should be selected at random and specimens of their stools collected and sent to Haslar. The men came from all parts of the country, and this system of random selection was calculated to ensure that the cases examined would not be representative of any one particular district or section of the civil community, but would be a fair sample of the whole.

Owing to the pressure of work on the medical staff at the barracks, and other considerations, it was not found possible to obtain the histories of all cases sent for examination, but it was thought sufficient to make special inquiry as to the history of each case found to be a carrier of *Entamoeba histolytica*. A scheme of questions was drawn up, as to whether the man had ever been abroad, his occupation, residence, &c., during civil life, and whether he had ever had symptoms of intestinal disease. These questions were put to each man as occasion arose, and the answers provided the "histories" to be given later.

II. Technique.

As it was desirable to examine a fairly large number of cases, and considerations of time and convenience of arrangement with the barracks had to be taken into account, it was decided to allow only one examination in each case. It was therefore necessary to define, as a standard, exactly what constituted "one examination." In practice, in the routine examination of patients in the hospital, it had been found that the exhaustive inspection of two cover-glass preparations of thin emulsions of each stool was generally sufficient for one examination (i.e., if cysts or amoebae of *E. histolytica* were present in any given specimen, they would generally be detected by this method, unless the infection was a very slight one). In fact, records were to hand showing that two preparations had been the average number devoted to each first routine examination of new cases for many months at Haslar.

This standard was therefore adopted in dealing with the whole of the 400 new entries; it had the advantage of rendering the results more nearly comparable with those obtained for convalescent dysenterics and other patients examined in the hospital, and these will be given for the sake of comparison, being now published for the first time in full.* It also happens to be identical with the standard adopted for "one examination" by the Liverpool workers, (l, p. 412) and therefore makes the results strictly comparable with theirs, except in so far as the personal element has to be considered.

From each specimen, then, two small drops of emulsion were placed side by side on a slide, and each covered with a cover-glass. As a rule, one emulsion was made in normal saline, the other in Weigert's iodine solution, and the "loopfuls" of faeces were usually taken from different parts of the specimen, to allow for the possibly unequal distribution of the protozoa. The two preparations were then gone over completely under the microscope with the aid of a mechanical stage, using a 1 inch objective and a No. 3 ($\times 8$) ocular. If no protozoa were found, the case was recorded as negative. If any cysts of doubtful nature were found, it was sometimes necessary to make further preparations, but this, of course, does not alter the standard of "one examination."

III. Results.

The results of the investigation may be most conveniently stated in the form of a table. It may be mentioned here that in no case were any active amoebae found. In all cases

* A note on the protozoological findings in the first 394 cases examined at Haslar has been published in the Medical Research Committee's Report on Dysentery Cases received from the Eastern Mediterranean. (Special Report Series, No. 6, III., 1917, p. 24.)

the terms *Entamoeba histolytica* and *Entamoeba coli* refer to the encysted forms. Table I. shows the incidence of *Entamoeba histolytica* and other intestinal protozoa among new entries to the Royal Navy and Marines at Portsmouth. Total number of cases examined = 400. These men came from all parts of the British Isles, and were in no way representative of this district in particular.

(a) Total number of cases found to be infected. (b) Col. (a) as percentage of the cases. (c) Pure infections. (d) Mixed infections.

TABLE I.—400 New Entries. TABLE II.—888 Patients.

| Organism. | (a) | (b) | (c) | (d) | (a) | (b) | (c) | (d) |
|--|-----|-------|-----|-----|------|------|-----|-----|
| Protozoa of any kind ... | 120 | 30.0 | 110 | 10 | 202† | 22.7 | 179 | 23 |
| <i>Entamoeba histolytica</i> ... | 10 | 2.5 | 9 | 1 | 52 | 5.9 | 35 | 17 |
| <i>Entamoeba coli</i> ... | 94 | 23.5 | 86 | 8 | 118 | 13.3 | 104 | 14 |
| <i>Entamoeba nana</i> ... | 3* | 0.75* | 1* | 2* | — | — | — | — |
| <i>Giardia</i> [<i>Lambia</i>] <i>intest.</i> { <i>adults</i> ... | 22 | 5.5 | 14 | 8 | 47 | 5.3 | 41 | 6 |
| <i>Chilomastix</i> [<i>Tetramitus</i>] { <i>mesnili</i> ... | 1 | 0.25 | — | 1 | 2 | — | 1 | 1 |
| <i>Trichomonas hominis</i> ... | — | — | — | — | 2 | — | — | 2 |

* The figures for *Entamoeba nana* cannot be regarded as trustworthy, as no special effort was made to search for it, and when present in small numbers it may have been frequently overlooked.

† Including 3 cases of *Entamoeba nana* (which was only recognised during the latter part of the period covered, and even then probably often overlooked) and 1 case of an amoeba of the *limax* type.

Before discussing the significance of these results it will be well to compare them with those derived from the examination of cases in the Royal Naval Hospital, Haslar, between March, 1916, and July, 1918, most of whom were convalescent dysenterics, or were suffering from intestinal disorders of various kinds, and had been serving abroad, many of them in the Mediterranean area. Table II. shows the incidence of the various protozoa among 888 such cases. Account is taken only of first examinations, in order to make the results more comparable with those already given. When further examinations are included, the percentages of "positives," of course, increase with every additional examination.

It has not been possible to classify the cases included in Table II. into men who have and men who have not suffered from dysentery, as the laboratory records do not supply sufficient information as to their history. It should be borne in mind, however, that some of the cases included in the table were at the time of examination actually in an acute phase of amoebic dysentery, or, at all events, were passing active amoebae. At the first examination free amoebae were found, either alone or together with the cysts, in nine cases. Subtracting these from the 52 in column (a) in the table, we have only 43 *E. histolytica* carriers, as distinct from actual cases. This brings the percentage 5.9 in column (b) down to 4.8.

Comparing the two tables (I. and II.), therefore, we find that the incidence of the "harmless" protozoa severally—*Entamoeba coli*, *Lambia intestinalis*, and *Tetramitus mesnili*†—and that of protozoa taken as a whole is actually higher among the "new entries" (more or less representative of the civil population of the British Isles) than among the men who have been in regions where they would presumably be more likely to be exposed to infection; while the presence of *Entamoeba histolytica*, though of considerably lower frequency than among the latter, is still about half as frequent. It must be remembered that all the figures probably err on the side of being too low, owing to the small number of examinations of each case, and that they give a totally inadequate idea of the actual incidence of infection. In Section V. an attempt will be made to estimate the probable amount of error in the case of *E. histolytica*, and it may be assumed that at least an equal amount of correction would be necessary in the case of the other protozoa.

IV. Histories of the "New Entry" Cases Positive for *Entamoeba histolytica*.

A summary may now be given of the histories, as far as they are known, of the ten cases found to be carriers of *E. histolytica*.

CASE 5.—Age 18; farm labourer; usual place of residence, Petlar, Shetlands (in a village with 100 inhabitants). States he has always lived at home until entering the Service, working on a small farm. Has never been abroad. Has never had symptoms of intestinal disease.

† *Trichomonas* was not found at all among the new entries.

CASE 27.—Age 32 years 9 months; plumber; residence, Reading. Had resided at Baroda, India, for three years (February, 1915, to May, 1918), and had had a slight attack of dysentery there in 1917.

CASE 40.—Age 33; schoolmaster; residence, Preston. States he lived in the country in Lancashire until 12 years of age. Has never been abroad. Has had recurrent attacks of diarrhoea at intervals of nine months, lasting three or four days; last attack four months previous to examination.

CASE 44.—Age 21½; fitter and tailor; residence, West Bromwich, Birmingham. Has never been abroad. Has never had symptoms of intestinal disease.

CASE 84.—Age 18; outside porter; residence, East Grinstead, Sussex. Never abroad. Never had symptoms of intestinal disease.

CASE 181.—Age 18; bootmaker; residence, Kettering, Northants. Never abroad. Never had symptoms of intestinal disease.

CASE 211.—Age 18; bricklayer's labourer; residence, Wolverhampton. Never abroad. (This case was admitted at Haslar with "catarrh," developed pneumonia, and died before further information could be obtained. At the post-mortem examination made by Surgeon-Lieutenant S. L. Baker, R.N., nothing abnormal was found in the intestines.)

CASE 374.—Age 38; fireman in Merchant Service; residence, when in England, Rotherhithe. Had been in the service of the Orient Line since 20 years of age. Never had symptoms of intestinal disease.

CASE 389.—Age 19; fisherman; residence, Portstewart, Coleraine, Co. Derry, Ireland. Never abroad. Never had symptoms of intestinal disease.

CASE 393.—Age 27; ticket collector; residence, Queenstown, Co. Cork, Ireland. Never abroad. Never had symptoms of intestinal disease.

The following points of interest may be extracted from the preceding histories. Out of 10 carriers—

(a) Eight had never been out of the British Isles. One had resided abroad (in India) (Case 27). One had travelled extensively in the East (Case 374).

(b) Seven at least had never had symptoms of intestinal disease. (In regard to Case 211 information is lacking.) One had had dysentery (Case 27). One had had recurrent diarrhoea (Case 40).

(c) Five had lived exclusively in England. One had lived exclusively in Scotland. Two had lived exclusively in Ireland.

Out of the eight carriers who had never been abroad only one (so far as is known—*vide* Case 211) had ever had symptoms which might be attributable to his infection with *E. histolytica*.

Age and occupation appear to have no bearing whatever on the incidence of infection.

As far as the small number of cases justifies such a conclusion, infection appears to be pretty evenly distributed within the British Isles.

It is to be observed that two of the cases cannot strictly be considered representative of the population of these islands (Cases 27 and 374). The subtraction of these from the total gives 2, instead of 2.5, as the percentage of incidence (see column (b), Table I). There is reason to believe, however, that the real incidence is much greater, and certainly not less, than 2.5 per cent., as will be seen from the arguments in the following section.

V. Estimation of the Probable Incidence of *E. histolytica* had all Cases received numerous Examinations.

It is well known that infection cannot be detected at every examination, even in cases who occasionally pass very large numbers of cysts. The limitation of examinations to one for each case gives results which are only a fraction of the actual number of carriers probably existing in any given series of cases. Various attempts have been made to calculate the minimum number of examinations necessary in practice, and also to work out the margin of error where the number of examinations is too small.

Dobell,⁶ after much study of the matter, has expressed the opinion [p. 43] that more than three negative examinations must be made on an untreated case before it can reasonably be said to be free from *E. histolytica*, but that it is probable that in three examinations not more than half to two-thirds of the infected cases will be detected. Six examinations are suggested as a minimum in practice.

The Liverpool workers^{1, 2} have also studied this question at some length, and their final conclusion is that three examinations will only discover 50 to 57 per cent. of all actually positive cases.

Owing to the regulations regarding "negative examinations" of convalescent dysenterics in the Service, the number of examinations in the Haslar series has always been too small from this point of view. The following figures show the increase in the percentage of positives for *E. histolytica* at each examination as far as the third. The number of cases examined more than three times was so small that it has not been thought worth considering in this connexion.

Out of 888 cases examined at least once, 52 (or 5.9 per cent.) were found positive at the first examination.

Out of 335 cases examined at least twice, and negative at the first examination, 12 (or 3.6 per cent.) were found positive at the second examination.

Out of 164 cases examined at least three times, and negative at the first and second examinations, 3 (or 1.8 per cent.) were found positive at the third examination.

It is calculated, therefore, that if the whole of the 888 cases in the series had been examined twice the percentage of positives found would have increased from 5.9 to 9.5, and if all had been examined three times a still further increase to 11.3 would have taken place.

These figures, as far as they go, are so closely similar to those given for a series of 1713 cases by the Liverpool workers [2, Table XI.] that it is assumed that had more examinations been made of the whole Haslar series the percentage of positives would have continued to increase at the same rate for subsequent examinations as in the Liverpool series, and that conclusions based on that series may therefore be applied to the present inquiry.

In the Liverpool series referred to it was calculated that 33.4 per cent. of all cases that would have been found positive in six examinations were discovered at the first examination; and six examinations were calculated to be enough to detect the great majority of infections. It appears, therefore, that if the percentage of positives discovered at the first examination of any series be multiplied by 3 we shall have a moderate estimate of the percentage of positives actually existing in that series.

Applying this rule to the present series of 400 "new entries," where 2 per cent. were actually found positive at the first examination, we find that the real incidence would, in all probability, be not less than 6 per cent. Furthermore, since these men were not selected cases in any way, and were fairly representative, it is believed, of the general adult male population of the British Isles, we have the rather startling conclusion forced upon us that something like 6 per cent. of such a population are carriers of *E. histolytica*, and this figure might be found to be still too low, if a large series of cases were taken and the number of examinations of each were indefinitely increased.

VI. The Pathogenicity of the Cysts.

Granted that some such percentage of carriers as that indicated in the foregoing section exists among the population, it is desirable to find out to what extent they are a danger to themselves or to others with whom they are associated. The data on this subject are unfortunately at present quite inadequate.

It is now recognised that the cat is a suitable animal for laboratory experiments with *E. histolytica*, but it is not always easily infected, and young kittens have been found to be more susceptible than older animals.

It was thought desirable to test the cysts from the new entries from the point of view of pathogenicity, since it was not certain that the strains of the parasite found, though morphologically identical with those from dysenteric patients, possessed the same pathogenic properties. Accordingly two kittens were obtained and kept in readiness, soon after the first few "positives" were recorded. Unfortunately some time elapsed before another positive case was available, and by that time the kittens were almost half-grown, which possibly accounts for the failure of the experiments. The faeces of the two animals were examined from time to time before the infection experiments took place, and no parasites except those normal to cats were detected.

Experiment 1.—On Oct. 29th at 6.30 p.m., each kitten was given 10 c.c.m. of an emulsion in normal saline of faeces from Case 374. (The history of this case was not known at the time.) The emulsion was made in the morning of the same day, strained through muslin to remove gross particles, and left standing at room temperature till the evening. It was examined before use to make sure that it contained a fair number of healthy cysts. The injection was given by Dr. Filde with a 10 c.c.m. syringe attached to a No. 8 soft rubber catheter, which was lubricated with glycerine and passed down the oesophagus. The two kittens were kept under observation and their faeces examined daily (with few omissions) until Nov. 15th (17 days from the beginning of the experiment). On one or two occasions there was some diarrhoea; with mucus in the stools, but no amoebae were ever found and none of the signs of acute dysentery were observed.

Experiment 2.—On Nov. 15th, at 6.30 p.m., with the same technique as before, the kittens received injections (given by Dr. Filde) of two separate emulsions, as follows: Kitten 1 received 10 c.c.m. of emulsion from Case 389 containing numerous healthy cysts, the average diameter of which was 8 μ (a very small strain). Kitten 2 received 10 c.c.m. of emulsion from Case 393, in which there were many healthy cysts of typical average diameter (13 μ). As in the former experiment, the faeces of both kittens were examined almost daily, until Nov. 29th

in the case of No. 1, and until Nov. 30th in the case of No. 2, and though there were again occasional diarrhoeic stools, with mucus, no serious signs arose and no amoebæ were found.

Kitten 1 was killed (by coal gas) on Nov. 29th and a post-mortem examination failed to reveal any lesions of the mucous membrane of the intestine, or any amoebæ in the contents or in scrapings from the surface. Kitten 2 was similarly killed and examined on Dec. 2nd. No amoebæ were found in the intestinal contents or in scrapings from the mucous membrane. The rectum showed prominent lymphatic nodules, but sections of these revealed nothing of a pathological nature.

It is worth recording that both the kittens were found to be fairly heavily infected with *Lambia* (apparently the human species). The cysts were first found in the faeces of No. 1 on Nov. 2nd (four days after the first infection experiment) and in the faeces of No. 2 on Nov. 20th (five days after the second infection experiment). Cysts of *Lambia* had not been observed in any of the human stools used in the experiments, but *Lambia* is not known to be a normal parasite of the cat, and it is probable that the infection was artificially produced. The cysts were found repeatedly during the examinations of the faeces of the kittens, and numerous active forms of *Lambia* were found post mortem in the lower part of the small intestine of each.

The negative result of the experiments as regards *E. histolytica* is probably of little significance. A positive result would have been valuable, but other workers have found that experiments in the infection of cats with cysts per os are often failures, especially when the cats are too old. Dale and Dobell⁷ succeeded in infecting one kitten out of eight in this way, and the Liverpool workers⁴ one out of four. The present experiment, therefore, though negative, must not be taken as an indication that strains of amoebæ from carriers in the British Isles are non-pathogenic. Further evidence on this point is necessary before any statement of this kind can be made.

VII. Summary and Conclusion.

Among 400 healthy new entries to the Royal Navy, freshly joined from places all over the British Isles and examined once each, 10 were found to be carriers of *Entamoeba histolytica*. Of these, 8 had never been out of the British Isles, and 7 at least had never had dysentery. Taking the 8 home cases only, the percentage of infections found at a single examination is 2. This, however, is a minimum figure, and it can be calculated that the real percentage of carriers among the adult male population must be nearer to 6. If this is the case, it may be doubted whether the rigorous treatment of carriers in the Services, who have not themselves suffered from dysentery, is justified or necessary. The percentage of carriers is naturally higher among men who have served in countries where the disease, in its acute form, is endemic, and especially under the conditions of war. But in all probability, given good sanitary conditions, the ordinary carrier is not a serious source of danger to others. The view that he is a source of danger to himself, in that he may at any time develop dysentery or hepatic abscess, remains in any case to be considered, and upon this point the present inquiry offers no evidence.

Experiments on kittens were tried with a view to obtaining evidence of the pathogenicity of the strains of cysts from the "new entries." The fact that the kittens failed to become infected is not, however, regarded as evidence for the non-pathogenicity of such strains.

The writer's thanks are due to Mr. C. O. Dobell, F.R.S., for his kind suggestions as to the general lines of the work, and for some hints on the method to be employed in the infection experiments on kittens; and to Dr. P. Fildes, Surgeon Lieutenant-Commander, R.N.V.R., for the actual performance of those experiments, and for his kind assistance and criticism throughout the work.

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THE ANALYSIS OF A COMPOSITE NEUROSIS.

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As for that wandering ship of the drunken pilot, the mutinous crew and the angry captain, called Human Nature, "fantastical" fits it no less completely than a continental baby's skull cap the stormy infant.—MEREDITH, "The Tragic Comedian."

FROM time to time in the study of the neuroses of war cases are met with which disclose the combination of a war neurosis with another of different order: composite conditions in which the development of a neurasthenia or allied disorder resulting from war strain has taken place in conjunction with a pre-existing neurosis or the rudiment of one.

War neuroses, in common with others we were familiar with before the war, we know to be entities of considerable complexity. These composite neuroses, however, attain a double complexity from the synthesis of two pathologically distinct conditions. From the consequent adjustment of the treatment which this implies it is of the utmost importance, therefore, for the condition to be recognised.

The case about to be described forms an example of such a condition. It was treated at an advanced centre in France, and consequently under difficult and unfavourable conditions. It presents, however, a number of points of considerable interest, not only in the fact of the improvement which resulted from an analysis left by force of circumstances incomplete, but in the illustration it provides of several of the present-day problems of psycho-analysis.

However much the significance of the sexual factor as taught by the Freudian school may be disputed, the value of the psycho-analytic method is becoming more and more widely recognised. In the stimulating nature of the discoveries made by its means and the widening scope for investigation it has suggested, it has inspired the spirit of a sort of renaissance for psychology and psychiatry. One of the chief errors, in my view, of psycho-analyst schools hitherto has been in the mode of presentment of their subject. The results of their very important investigations have been described along lines entirely uncorrelated with the principles of normal psychology. Mechanisms and principles of mental activity have been described with no reference to what was already known on the subject. In consequence it seems that two psychologies have developed—two parallel systems, the psychology of psycho-analysis, and the academic system of the schools.

This may have been inevitable in the beginning. Jung observes that psychology had little to offer to the psychiatrist until Freud's discoveries.¹ But since the publication of "Selected Papers on Hysteria" in 1895, psychology has made very considerable advances, and a correlation between the two is not only to a large extent possible, but urgently desirable.

The process, however, has by certain authorities unfortunately been carried further. A remarkable esoteric phraseology has been evolved which has had the effect not only of obscuring the issues of the subject, but by its semi-mystical colouring has laid it open to the accusation of oneiromancy and superstition.

There is, so far as I am aware, no reason why scientific knowledge should not be expressed in clear and simple language. New mechanisms, new facts as they are brought to light, undoubtedly require new names to label them, but in this case it has been carried beyond the limits of merely technical necessity. Freud remarks: "A clear and unequivocal manner of writing shows us that here the author is in harmony with himself, but where we find a forced and involved expression aiming at more than one target, as appropriately expressed, we can thereby recognise the participation of an unfinished and complicated thought."² In this regard the elaborate and obscure terminology developed by some of the psycho-analyst pioneers raises a suspicion—however wrong it may be—that the obscurity of expression may indicate a corresponding obscurity of conception.

Account of Case.

The present case is similar in many respects to others described in psycho-analytic literature except that it gains a special interest and importance from the fact of the

conflict which was disclosed being combined with the syndrome of a war neurosis.

Pte. C. N., an intelligent young man of 23, of good social position, was admitted into hospital on July 21st, 1917. He was in a mildly depressed state, complained that he was confused in mind and that his nerve had given way in the line. When asked to describe in greater detail his mental confusion he said that when coming down in the motor ambulance to hospital he felt as if he were losing himself and didn't know where he was. He had to sit up and look around to assure himself of his surroundings. His head felt larger than its normal size and he had a heavy feeling in it as if he had had a "night out." There was "a lack of power of thinking properly" as if there were a brake on his thoughts: a definite feeling of effort was required to think. The content or scope of consciousness seemed to be restricted and smaller than normal except when he was dropping off to sleep, when, he said, his thoughts "wandered all over the place."

He joined the Army in October, 1915, and came to France in March, 1916. He remained perfectly well, acting as stretcher-bearer, until April 10th, 1917. On that day he was one of a stretcher-squad carrying a patient to a dressing station; a shell burst in the middle of them, killing three. Patient was left unwounded and a short amnesia exists for the events immediately succeeding this. He found himself some time later lying against the wall of a house, very shaky, nervy, and jumpy. He walked down to the dressing station of a field ambulance, and after two or three days was sent down to the base. He remained there for a fortnight and then rejoined his unit. It was at that time behind the line, and patient stated that he felt well, and as they were out of the shelling area his "nerves" did not trouble him. Three or four weeks before admission to hospital he was sent into the line again to F—. Then he noticed his nerve beginning to give way; shelling made him nervous, he was jumpy, shaky, and easily scared, which he had never been before. About a fortnight later he moved to a dug-out with a signboard opposite—a signboard destined to play a significant part in his neurosis. His nerves gradually grew worse, he began to have terrifying dreams, and to feel confused and "silly"—as if he could not answer questions sensibly. The following morning he had an attack of sickness and vomiting, brought on, he thought, by eating sardines from a tin previously opened, and he was sent to hospital.

There was no history of any nervous or mental abnormality in his past life and, apart from the fact that his sister had been a sleep-walker for some years, his family history was negative. On examination of the patient there was no sign of any organic derangement.

The facts described of his history and condition were elicited without difficulty. From his manner, however, it was evident that there was something more to be told, and after some hesitation he admitted, with a certain humorous shamefacedness, that a particular image was constantly recurring in his consciousness. It kept continually obtruding itself, no matter what he attempted to do. He felt it was so ridiculous that he did not care to mention it in the first instance. He could describe it in no other way than by saying it was just like a "spotted pudding."

We have here an obsessive "overweighting of a particular element in consciousness" and consequent loss of the homogeneity of mind which is recognised invariably to denote the presence of a mental conflict. The significance of this symptom was sufficient to show that we had to deal with a disorder more complex and severe than the common forms of war neuroses.

The first step in the treatment was to undertake an investigation of the obsession which offered itself for analysis. Treatment was begun on August 1st, 1917, and it will be interesting to record the material of association exactly as it was produced by the patient. The spotted pudding brought into his mind the image of the "trunk of a tree; one in a jig-saw puzzle in the ward—a white spot above it—a white rabbit—pink eyes—ferns with red flowers—Islé of Wight—Italy and Sicily—an Italian woman with a basket—wearing a navy-blue shawl—with a white edge."

At this point he stopped, and when asked to tell what was passing in his mind he became somewhat agitated and indignant, and said he repudiated the suggestion—an immoral one—that had been put into his mind regarding the Italian woman. A few further details were obtained at this interview, but from the patient's somewhat disturbed state it was considered advisable to go no further in the investigation that day.

The next morning he brought to me the following dream that had occurred to him during the night:—

I came out of a school (dirty old brick affair with courtyard), rushed past L., who was standing in the yard (dressed in dark blue), and was carried some distance (against my will) into some side streets of an unknown town.

I felt that she was hurt with me and was half afraid to meet her, yet had a deep longing to meet her. She apparently followed me (in a very dignified mood).

She came down a narrow street to where I was standing and the last I saw was a man in khaki trying to force his attention on her while she was still resisting. (I knew that his attempt to force his company on her would be unsuccessful.)

This, it is evident, is a dream in which the meaning is very little disguised. The manifest is little different from the latent content, and the elements of conflict are readily discernible.

Analysis brought to light the fact that some time before the war he had fallen in love with, and become privately engaged to, a girl much beneath him in social position. His people were aware of the attachment and bitterly opposed to it. He was not in a position himself to earn a livelihood but was living with his people at home who, he knew, would cut him off if he married without their consent. All his prospects were bound up with his people's goodwill towards him. Relations were consequently very strained at home: an uncomfortable restraint grew up between him and the rest of his family and every meeting with his fiancée had to be arranged by subterfuge.

A further factor which intensified the conflict was the strong love he had for his mother. Since his love difficulty he had had to repress his feelings for his mother—he must give it all, he said, to one or the other. And he had realised lately how much he owed his mother, how much she had sacrificed for her family. His duty towards her he conceived to be respect and love, but he felt that under the existing circumstances this was impossible. He was not sure, he said, if he was justified in continuing this attitude of suppression towards his mother; he felt that he was not doing what he ought to be doing. It implied that he would have to make a decision sooner or later unless he could lead a double life. This, in brief outline, was the substance of the conflict.

It is interesting to observe how the elements of conflict are expressed in the dream itself. L., of course, is his fiancée, manifested directly without symbolic concealment. The phrases, "Rushed past L.," "Was carried some distance (against my will)," "I felt that she was hurt with me and was half afraid to meet her, yet had a deep longing to meet her," very clearly indicate the conflicting impulses of his state of mind. The school he recognised to be one he used to pass every day when at home; the dream, the story or reproduction of his mental conflict, is given, in other words, in the first place its natural or realistic setting. The unknown town he realised at once to be Arras; he could see, he said, the wreckage and ruin about him. Arras had made a great impression on him. He was in the Arras sector when he broke down and had to be sent to hospital. It formed, in fact, a symbolical indication of the mental wreck he found himself as the result of the conflict. "She came down a narrow street to where I was standing." This led him through a series of associations to a street—a narrow street—in his home town and a block of flats there, the sort of flat, he said, he would choose as a home if he could afford it—an interpretation whose significance is sufficiently apparent. The analysis of the "man in khaki" brought out further factors of the conflict. He proved to be the girl's present employer, who, patient said he had reason to believe, was forcing his attention on her; he had read between the lines of her letters.

The investigation of this single dream supplied, it is evident, an illuminating insight into the patient's state of mind, and it furnished, further, the key to the solution of the "spotted pudding" obsession, the analysis of which had been left incomplete. The Italian woman, patient admitted, was his fiancée, L., and when the significance of the attribute Italian was investigated he stated that the foot-shaped contour of Italy brought him back to the preparatory school in which this had been first impressed on him. He remembered that at this school he had been punished by the teacher for something he was not guilty of, and the strong feelings of resentment and injustice he had felt had made an impression, he said, which remained to the present day. The Italian attribute expressed symbolically the feelings of resentment and injustice associated with the idea of L. against his people in their treatment of her.

As the nature of the condition was rendered clear it became evident that the symptoms expressive of war strain—the shakiness, loss of nerve under fire, &c.—were of minor importance in comparison with the mental conflict seen to be dependent on causes wholly antecedent to the war conditions.

The shock received from the explosion of the shell, by producing a common type of war neurosis based upon a different emotional pathology, had impaired the mental synthesis or "equilibration." It had thus created a condition of affairs predisposing to the development of the second neurosis, which till then had existed only in embryo. The former were, consequently, ignored in the further analysis of the condition as being capable of alleviation or cure only in conjunction with a removal of the deeper conflict.

The following day—the second after treatment had begun—he reported that the "spotted pudding" obsession had disappeared. It went gradually, he said. After he discovered the Italian woman she took the place for a time of the "spotted pudding," and now the Italian woman had also ceased to trouble him. Another obsession had taken their place and was constantly obtruding itself in the same way. It was the image of the sign-board that had been opposite the dug out he occupied at F —.

This obsession was accordingly analysed and the associations as they came up were as follows:—

"The colouring of the signboard impressed him (it was an advertisement for Michelin tyres)—yellow with a bright blue edging—the French flag—colouring appeared round the word 'F'—it changed from green to blue—became dark, almost black—the word 'F'—resolved itself into a golden line—two vertical lines appeared at the edges of it—they widened to the extent of the board—it appeared like a hansom cab seen from behind—the coachman with tall hat and cockade—it is a wedding—through the window at the back he sees a man and a woman kissing—". After some hesitation he admitted that it expressed his own wedding.

At the next interview, two days later, he reported that he felt considerably improved; his headaches were better and the obsessions had ceased to trouble him. From that time, as the analysis of the condition proceeded and one by one the various and complex factors of the conflict were brought to light, although from time to time he showed transient fluctuations, he made steady progress towards improvement.

On August 20th, 1917, that is after three weeks' treatment, he reported that the chief symptoms that remained were feelings of weakness and of effort in the attempt to do anything. The obsessive ideas had disappeared, he was free from the feeling of conflict and worry he used to have, and the paresthesias about the head had gone.

The condition as it unfolded itself became complex to a considerable degree. It would be impossible, therefore, within the scope of a short article to describe all the elements as they revealed themselves and brought to light the various aspects of the many-sided conflict. Two further dreams, however, are of some considerable interest. The first is as follows:—

I dreamt that as I lay in bed I suddenly realised the presence of a cat (dark colour) on my right shoulder. I stroked it and it commenced purring, whereupon I disposed of it (how I don't remember). Then another cat (also of dark colour) appeared in the same position, but it was not quite as tame as the former. Whether it disappeared or not I cannot say, as a small dark-brown, smooth-haired dog made its presence felt on myself. It had hypnotising bluish-green eyes (with large pupils) protruding from its head, and upon my attempt to soothe it (with the ultimate intention of throwing it out of the window or otherwise disposing of it) it bit into the palm of my left hand, and the pain caused me to wake up.

The patient had at this stage gained a certain proficiency in the art of analysing his own dreams, and he voluntarily produced the following interpretation. The cat, he said, seemed to typify his present condition, and the disposal of the cat seemed to mean that he had thrown off and got the better part of his mental trouble. The other cat typified a more difficult mental trouble yet to be got rid of. The dark colour signified his mental condition. The fact that the second cat was not so tame meant that this remaining difficulty was not so easy to get rid of as the former one.

Here his analysis ended; as regards the dog he could find no interpretation for it. Further investigation, however, brought to light its meaning. It was shown beyond doubt to be the symbolic representation of his fiancée, and "bit into the palm of my left hand" he interpreted as "something I want to get rid of pressing on my brain—something that binds me, holds me captive that I can't get rid of it." The condensation mechanism in regard to this symbol is shown in an instructive way in the fact of its being associated or "constellated" with two complexes of fear, one of which was the memory of an actual experience of being bitten by a

rat on one of the fingers of the left hand at the age of 5 or 6. The significance of this symbol in conjunction with the parenthetical phrase in the dream "with the ultimate intention of throwing it out of the window, or otherwise disposing of it," gives the first indication of the direction in which a solution of the conflict was shaping itself in his mind—an inference confirmed subsequently on the patient's own admission.

The remaining dream is not without its humorous aspect.

Someone (connected with the staff of this hospital) appeared and told me that Captain Dillon had committed suicide (as far as I can remember by means of a razor). I know that the scene where the dream took me was unfamiliar, but cannot recall details.

The "someone" on analysis proved to be my clerk, and the patient's immediate further association was that the clerk prepared all the base lists. He was wondering if he were going to be sent down to the base. Captain Dillon was the person who was at the time keeping him back. The unfamiliar scene he associated as "the roadway through the gate of the hospital—outside—freedom—Blighty." The dream, in short, expressed his desire to get to England. He had, in fact, a doubt as to whether he was being treated in order ultimately to be sent back to the line again. Captain Dillon formed the obstacle to his desire, and it is arranged that he conveniently puts himself out of the way.

The mechanism is well illustrated here of exaggeration or over-estimation of dream impulses by which difficulties or obstructing influences are removed not merely sufficiently for the purpose in view, but in an unnecessarily complete and extravagant way. This is well shown, too, in the dream of a patient who came to me in a very distressed state of mind because he dreamt that he had murdered his father. His father, it transpired, was a chronic invalid and a severe burden on the patient, who had a difficult struggle to keep his wife and children in decency. In the dream the unconscious took a thorough and effective method of disposing of the handicap, although consciously the patient had never entertained more than a passing and involuntary regret over the state of affairs.

Conclusion.

The treatment extended over a period of six weeks. Two days before being evacuated to the base the patient reported that the sense of fatigue had diminished, the feeling of restriction to consciousness had gone, and his power of concentration was returning.

The case illustrates in a striking way the great value of early treatment in disorders of this class, and shows that much may be done even under the conditions of an advanced centre in France. It forms a certain endorsement of the mechanisms of dream formation and of the principles in general of psycho-analysis. But, probably as important, it brings forward certain problems in the subject which are still awaiting settlement.

It will be noted, for instance, that all of the dreams in the case were not found to contain on analysis a sexual interpretation, as taught by Freud. My limited experience in this respect coincides with that of the schools of Jung and Adler in opposing the exclusively sexual interpretation. As regards, too, the question of a fixed symbolic meaning I am led to agree with Jung, who teaches that there are no fixed symbolic meanings to the images in dreams. "The various dream pictures have each their own peculiar value."

Another feature of the subject illustrated is the fact that while in some dreams the whole manifest content is "phantastic" in form, every element being disguised in symbolic figures, in others this is only partially the case, certain of the elements being used "realistically" in their everyday significance or value. To what extent the components of a dream are to be interpreted symbolically depends on the ultimate analysis of the dream as a whole.

In his conception of the "manysidedness" of dreams Jung has laid emphasis upon another aspect of dream formation of very great importance. "In view of the comprehensive many-sidedness of the dream material," he writes, "one must beware above all of one-sided formulations. The many-sidedness of the meaning of a dream, not its singleness of meaning, is of the utmost value, especially at the beginning of the psycho-analytic treatment." This is well shown in the first dream described above.

Finally, there is the problem raised by the nature of the conflict revealed in the analysis. We have had to deal here with a neurosis, the expression of a mental conflict dependent

inherently, not on early or infantile "fixations," but on a present and pressing difficulty urgently requiring removal. In a chapter in "Analytic Psychology" Jung discusses with Dr. Loy whether there are not certain moral problems in their nature incapable of solution. In the present case, analysis brought to light a conflict which was in large part unconscious, in which the opposing factors were unrecognised by or unknown to the patient. By this means the import and significance of the disrupting influences affecting his mind were made conscious and clear to him, the different elements as they appeared laid before him, as far as possible, in their true proportions. A new mental orientation was thus made possible for him, a new capacity given him to deal with the situation. Jung says: "Because (men) will not and cannot think out to its logical conclusion what it is they really desire, their erotic conflict is largely unconscious."⁶

The case, I am aware, affords opportunity for an exponent of the extremer school to maintain that if the analysis had been carried far enough the inevitable early sexual "fixation" would have been unearthed—perhaps in this instance in regard to the relation of the patient to his mother. It is not, of course, impossible, but as it can be neither verified nor disproved it has little practical bearing on the subject.

On the other hand, the disappearance of the obsessions and the improvement which resulted in the remaining symptoms are sufficient practical indication of the accurate direction of the treatment. An interesting epilogue is formed by a letter received from the patient a month after evacuation from the hospital, in which, after expressing his thanks for the treatment, he says: "I had very little faith in it until I realised that you had (1) analysed and thereby dispelled the obsessions I was troubled with; and (2) proved to me the mistaken attitude I had adopted towards certain matters."

Since the article was first written I have learned that the patient is now back at his former occupation.

References.—1. Analytic Psychology, p. 355. 2. Psycho-pathology of Every-day Life, p. 114. 3. Hart: Psychology of Insanity, p. 163. 4. Jung: Loc. cit., p. 308. 5. Jung: Loc. cit., p. 217. 6. Jung: Loc. cit., p. 372.

THE PREVENTION AND TREATMENT OF DIABETIC COMA.

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OF all the complications of diabetes mellitus the commonest and most fatal is coma. In 50 to 60 per cent. of cases it is the immediate cause of death, and when once developed is usually fatal within a day or two, and sometimes within a few hours, of the onset of the characteristic symptoms.

Symptoms.

Coma may occur early or late in the course of the disease, although it is particularly prone to develop during the first year of treatment, and is more common under than over 40 years of age. The most striking symptom, exaggerated respiration without cyanosis or evidence of physical cause, often appears with dramatic suddenness. The respiratory movements change their character and gradually involve all the accessory muscles of respiration, inspiration is prolonged like the breath preceding a yawn, while expiration seems forced and more complete than normal, the so-called air-hunger of Kussmaul.¹ In the earlier stages the respiratory rate is not much accelerated, 16 to 20 a minute, but as the coma deepens it becomes more rapid and may reach 40 a minute, and there is then no evident pause between inspiration and expiration. A characteristic sweet, fruity odour of the breath, which may pervade the whole room, is noticed occasionally and will suggest to an experienced observer the cause of the coma. The face has an anxious expression and is sometimes flushed, although it is often pale and drawn, with a yellowish tint. The eyes are generally half closed, the pupils react to light until deep coma occurs and are usually dilated, less often contracted. Softening of the eyeball, due to a fall in the intraocular pressure, is an early and important sign of diabetic coma. The pulse is soft and accelerated, but rarely exceeds 120 a minute. The blood pressure is always low and

falls further as the coma develops. The usually subnormal temperature of a diabetic rises with the onset of coma and may reach 100° F. or thereabout, but as death approaches it sinks again and may fall as low as 90°. The extremities are cold and in some instances there is slight œdema of the feet.

Although coma may develop suddenly, particularly in the course of some intercurrent infectious disease, it is usually preceded by several days of suggestive symptoms, which point to the imminence of its occurrence. The appetite becomes capricious, digestive disturbances and slight nausea are complained of, weight is lost more rapidly than would be expected merely from defective nutrition, and cramp in the legs and abdomen occurs, particularly at night and the early morning. The patient becomes restless and irritable, and complains of headache, which is frequently attributable to the obstinate constipation which usually exists. Marked lassitude supervenes, and this is followed by drowsiness, which gradually deepens into profound coma from which the patient cannot be roused.

Coma of the type described is met with in many cases, but in some typical air-hunger is slight or absent and cardiac weakness dominates the picture. The patient may die suddenly with few warning symptoms, consciousness being retained to the end, or there may be a complaint of nausea or weakness, the pulse is found to be soft and rapid, 140 to 160 to the minute, the heart sounds are barely audible, and loss of consciousness is rapidly followed by death. In a few cases the onset of coma is ushered in by acute excitement and convulsions.

Indications of Commencing Acidosis.

Although the clinical symptoms of diabetic coma usually develop with startling suddenness, and the premonitory signs are often so slight or indefinite as to be easily overlooked, regular examinations of the urine, blood, and alveolar air furnish indications of the probable onset of the complication, so that if they are frequently carried out it should come as no unforeseen event. Ever since Stadelmann, in 1883, discovered oxybutyric acid in the urine in severe diabetes and compared diabetic coma with the condition produced in animals by poisoning with mineral acids, it has been recognised that diabetic coma is usually associated with a high degree of acidosis which, unlike the acidosis occurring in conditions where there is no disturbance of carbohydrate metabolism, is accompanied by the presence of acetone bodies in the urine.

The appearance of these bodies is usually the first sign of commencing acidosis. As the alkaline reserves of the body are lowered, through their being used for the neutralisation of the excessive formation of acids, the tolerance for sodium bicarbonate increases so that instead of 5 g. (77 gr. or 1½ dr.) given by the mouth, being lowered by the excretion of part in the urine, with a consequent change in the reaction to litmus from acid to alkaline as in normal persons, 75 to 100 g. (2½ to 3½ oz.) or more may be required in individuals on the borderland of coma. At the same time there is an increase in the ammonia output in the urine from the normal of 0.5 to 1.0 g. per day, up to as much as 10 or even 12 g. in cases of deep coma. As a rule an excretion of 4 g. a day rarely exists for more than a few days without coma developing. Normally the ammonia nitrogen constitutes 4 to 5 per cent. of the total nitrogen of the urine, but as coma becomes imminent 40 to 50 per cent. of the nitrogen may be excreted as ammonia.

A useful indication of serious acidosis is a diminution in the available carbonates circulating in the blood which may be determined indirectly, from a lowering of the carbon dioxide of the alveolar air, or directly from the blood itself. The carbon dioxide of the alveolar air can now be estimated at the bedside very easily and quickly by the simple and ingenious method devised by Marriott,² but for the analysis of the carbon dioxide content of the blood the more elaborate laboratory methods of Van Slyke³ are required. A diminution in the titratable alkalinity of the blood indicating an acidosis of clinical significance can be readily detected by the method described by Sellards,⁴ which depends upon the change in reaction to phenolphthalein from alkaline to

² Journ. Amer. Med. Association, 1916, lxxi., p. 1594.

³ Proc. Soc. Expt. Biol. and Med., 1915, xli., 184; Journ. Biol. Chem., 1917, xxx., 305, &c.

⁴ Principles of Acidosis, Harvard Univ. Press, 1917, p. 103.

¹ Deut. Arch. f. klin. Med., 1874, xlv.

neutral of the protein-free filtrate of the serum when the alkali reserve of the body is definitely subnormal.

Criticism of Alkali Therapy.

Clinical experience and many laboratory experiments have suggested that diabetic coma is the culminating point of an increasing acidosis, and one might therefore expect that therapeutic measures to counteract and control the acidosis would prevent the onset of coma and cure it should it have developed. The obvious treatment would be to make good the alkaline reserves of the body and ensure their being maintained at the normal level by the administration of alkalis by the mouth or, if need be, by intravenous injection. It is true that a certain degree of success has apparently attended this method of treatment, and there are even a few cases of diabetic coma on record where large doses of sodium bicarbonate have saved the patient, at any rate temporarily, but on the whole the results of alkali therapy have been disappointing, and it can hardly be claimed that the death-rate has been materially improved by it. After all, it is only symptomatic treatment which does not touch the source of the trouble, the excessive formation of organic acids. Moreover, the attempt to control an acidosis with alkalis is not always free from danger and discomfort. Large doses of alkali, such as are often necessary, are apt to cause irritation of the gastro-intestinal tract and give rise to nausea and vomiting, especially if not administered in very dilute solution, and then the large amount of fluid may overburden the stomach and throw excessive work on the kidneys. When taken over long periods alkalis interfere with digestion, tend to deplete the body of necessary salts, particularly chlorides, and have a depressing effect on the heart if sodium salts are chiefly used. Finally, as Joslin has pointed out, it is possible that the administration of alkalis over long periods may set free acid bodies existing combined, quiescent, and harmless in the tissues, and so do harm, for the constant use of alkalis appears to promote the constant excretion of acid bodies. It is doubtful, therefore, whether the attempt to treat acidosis and prevent coma in diabetes with alkalis is sound practice, more especially as Allen's experiments⁵ have shown that in diabetic dogs no apparent prolongation of life results from keeping the alkaline reserve of the body normal with alkalis given intravenously or by the mouth.

Control of Fat Intake.

A more satisfactory way of attacking the problem would be to prevent the formation of unoxidised acid products by limiting the material from which they are derived, and this is quite a feasible proposition, for the work of Rosenfeld, Hirschfeld, Magnus Levy, and others have shown that fat is the chief source of the acetone bodies and that it is from the fat of the food they are mainly derived. Recent work has proved that careful control of the fat intake in the diet is one of the most certain practical methods at present at our disposal for preventing acid intoxication and subsequent coma. By this means Joslin,⁶ who was a pioneer in that aspect of the treatment of diabetes, has been able to reduce his death-rate through coma from an average of 64 per cent. to 44 per cent.

There seem to be two reasons why systematic control of the fat intake in diabetes has been hitherto neglected: (1) the very prevalent idea that diabetes is merely a defect of carbohydrate metabolism; and (2) the generally held doctrine that loss of weight by diabetics must be prevented at all cost. Experiments with diabetic animals and clinical observation have alike shown that both these ideas are erroneous. Diabetes is not a mere inability to assimilate glucose; from the first it is a defect in the metabolism of carbohydrate, protein, fat, and probably mineral substances as well, so that treatment directed to the control of the glycosuria alone deals with one aspect of the disease and overlooks what may be more serious but, for a time, less evident defects in the chemistry of the body. The treatment from the commencement must be based on the hypothesis that we have to deal with a general failure of metabolism, and that while restriction of a single food principle, such as carbohydrate, may suppress the symptoms temporarily the progress of the diabetic process can only be prevented and complications, including coma, avoided by dealing with the condition as a whole.

Fat being the principal source of the unoxidised acid end-products giving rise to acidosis, control of the fat in the diet of a diabetic is obviously a matter for serious consideration from that point of view alone, but it is also important from another aspect. It would seem that the weakened metabolic functions of the diabetic are capable of dealing with only a definitely limited load, and that when this load is exceeded failure of the metabolic processes occurs. Consequently, although a reduction of the carbohydrate in the diet may stop the glycosuria, it will not prevent the disease progressing if the total intake of food is maintained by adding fat or protein. The metabolic functions will then still be over-taxed, and in spite of an apparent improvement the glycosuria will eventually return with increasing acidosis, &c. For a time the progress of the disease may again be stayed by lowering the carbohydrate intake, but so long as the total load of food is not reduced the downward progress of the disease will continue. In other words, the case will have the characters of a progressive diabetes with a steady fall in carbohydrate tolerance, a type one so frequently meets, especially in young people where an attempt is being made to keep up the weight by over-feeding with fat and protein. If, on the other hand, such patients are allowed to lose weight until the body mass is reduced to a level that can be maintained by a total load of food below what can be efficiently dealt with by their defective metabolic powers the apparently inevitable progress of the disease is checked, return of the glycosuria is prevented, and acidosis is avoided, or at least kept within narrow limits. It is true that patients treated in this way become thin, but it does not follow that they are less efficient muscularly, for, as Williams's experiments have shown,⁷ and my own clinical experience confirms his results, muscular efficiency and weight are not synonymous. A thin patient feeding within his metabolic limits can do more, and is less easily tired, than one who is over-taxing his metabolic powers in an attempt to maintain a hypothetical weight for an individual of his size or who is over-weight.

Causation of the Coma.

Regulation of the fat intake in diabetes undoubtedly places in our hands a most useful weapon for combating acidosis, and it appears probable that the death-rate from coma may be materially reduced thereby, especially when control is exercised from the earlier stages of the disease, but it does not necessarily follow that no other methods are available to reduce still further a mortality which is appallingly high.

It has been for so long the custom to accept acidosis and coma as cause and effect in diabetes that the possibility of the acidosis being an associated, and perhaps an incidental, phenomenon has not received the attention it deserves. The failure of alkali therapy to achieve the results expected of it has been one of the main stumbling blocks in the way of a general acceptance of the acid intoxication theory, and it has therefore been suggested by some that the ketonic acids and their salts induce coma, not in virtue of their acid properties, as that theory assumes, but in consequence of some specific toxic action they possess. But experiment has proved that these substances are not poisonous to normal animals in doses likely to be met with in practice. To meet this difficulty it has been claimed⁸ that aceto-acetic acid and its salts are toxic if the animal is first rendered diabetic by extirpation of the pancreas. I am not prepared to deny that a diabetic and a normal animal may react differently to these substances, and that they may be more poisonous to the former than to the latter, but the fact that a condition which is known to alter fundamentally the metabolism of the body, and of itself leads to coma, has to be instituted before reasonable doses produce a toxic effect rather tends to weaken the force of the argument.

There can be no doubt that coma is the consequence of an auto-intoxication, but consideration of the evidence available suggests that it is a toxæmia resulting rather from the general failure of metabolism occurring in diabetes than from a specific toxin originating in a break in the chemistry of the body in one particular direction. It seems most likely that coma may be produced by several toxins of different origin acting together. In some instances, however,

⁵ Amer. Jour. Med. Sci., 1917, March.

⁶ Treatment of Diabetes Mellitus, Lea and Febiger, 1917, p. 342.

⁷ Arch. Int. Med., September, 1917, p. 399.

⁸ Poulton: THE LANCET, June 29th, 1918, p. 897.

the metabolic defect may be more complete or rapid in one direction than another, and occasionally there may be associated defects in excretion, such as we know to occur in interstitial nephritis, which will cause one type of poison to have a preponderating effect. In this way we can account for the variations in the symptoms met with in different cases and for the occasional beneficial effects of the alkaline treatment.

Possible sources of toxins, other than fat, are carbohydrate and protein, while the modifying influence of inorganic salts on metabolism must also be taken into account. It is unlikely that carbohydrates give rise to poisonous materials that tend to produce coma directly, for experience has shown that increase in the carbohydrate content of the diet when coma threatens often brings about a temporary improvement, especially when the patient has been treated previously on the historic lines of a "carbohydrate-free" diet, consisting chiefly of protein and fat. Indirectly an excess of carbohydrate in the diet, no doubt, has an influence in causing this complication, first through its effect in accentuating the metabolic deficiencies which underlie the diabetic condition, and secondly through the dehydration of the tissues consequent on the presence of an excess of sugar in the circulation. Water is needed to maintain the volume of the blood required for the mechanical efficiency of the circulatory apparatus, to carry nourishment to the cells, to remove the waste products of metabolism in solution, and to maintain the osmotic conditions essential for cell life. When it is abstracted from the body, and the loss is not made good owing to conditions of the gastro-intestinal tract which prevent retention and absorption, acidosis, sudden large inflammatory exudates, and other reasons, serious and rapid loss of weight occurs, the respirations and pulse increase in frequency, the systolic blood pressure falls, the tension of the eyeball is markedly diminished, the tongue becomes dry and parched, there is oliguria with constipation, the patient becomes restless and irritable, then apathetic, and, finally, comatose. The similarity of these symptoms to many of those met with during the onset of diabetic coma suggests that some of the latter, at least, may be a consequence of the dehydration of the tissues produced by a high concentration of sugar in the blood. It also helps to explain the frequency with which coma is precipitated by gastro-intestinal disturbances, particularly when there is vomiting or diarrhoea, and by conditions where large inflammatory exudates take place.

Disturbances of Protein Metabolism.

In 1913 Pribram and Loewy⁹ suggested that abnormal products of protein cleavage might be responsible for part of the symptomatology of diabetic coma. Other authors have since claimed that death in some cases may be entirely due to the effect of toxins resulting from the imperfect metabolism of proteins, and quoted cases of fatal coma where no evidence of acidosis existed.¹⁰ The occurrence of such cases, the absence of typical air-hunger in many instances, and the failure of alkali therapy to control the coma in most cases favour the argument that the condition does not always, or entirely, depend upon the acid products of defective fat metabolism and lend support to the view that other toxins are involved.

It has been shown experimentally that some of the products of protein disintegration are toxic, producing among other symptoms lowering of the blood pressure, depression, and narcosis, but no attempt appears to have been made to isolate such substances in diabetes. Some experiments I commenced four or five years ago with that end in view had to be abandoned temporarily, but so far as they went, and taken in conjunction with the results of the routine analysis of the urine in a large number of cases, they showed that protein metabolism in diabetes tends to become less and less complete as the disease advances, and that this is associated with a progressive failure in the functions of the liver similar to what is met with in acute yellow atrophy, some of the toxemias of pregnancy, &c. One of the most striking features of the urine in all severe cases of diabetes is the constant presence of amino-acids, which increase in amount as the disease advances, so that the amino-acid nitrogen often constitutes 50 per cent. or more of the total "ammonia nitrogen" as estimated by

the Malfutti formalin process. In one instance, for example, I found 6.3 g. of amino-acid nitrogen out of a total of 7.8 g. of "total ammonia nitrogen" in a 24 hours' specimen of urine passed six days before death from coma took place. In three cases where an analysis of the collected 24 hours' urine was made shortly after the premonitory symptoms of coma had appeared the amino-acid nitrogen was found to have dropped suddenly and in one had entirely disappeared, although 4.3 g. had been present the previous week. The nature of the amino-acids was investigated in 11 cases, three of which eventually died of coma. Tyrosin, histidin, phenyl-alanin, and glycocholl were found in all, while tryptophan, alanin, leucin, and arginin were only met with in the more advanced. In two cases, both of which died shortly after of coma, an amine resembling in some respects a toxic base described by Dale and Laidlaw¹¹ was isolated. Very often a marked increase in the uric acid output, which may reach 8 or 9 g. a day, is seen at, or about, the same time as the rise in the amino-acid nitrogen occurs and without any change in the diet being made. As a rule, the curves of excretion of uric acid and creatinin tend to run in opposite directions in diabetes and the rise in the uric acid preceding the onset of the symptoms of coma is no exception, a corresponding fall in the creatinin output usually being seen. Simultaneously the excretion of urobilin in the urine increases. These observations point to the onset of coma being associated with a failure in the functional activity of the liver, and it seems likely that the resulting imperfections in protein metabolism may be a contributory factor at least in bringing about the condition.

Effect of Withdrawal of Bases from the Tissues.

In a previous paper¹² I considered the effect of the withdrawal of bases from the tissues resulting from acidosis, and particularly of calcium and magnesium. I there pointed out that a balance between the two appears to be necessary for the smooth and efficient working of the nervous system and that an excessive loss of magnesium is associated with nervous instability. A striking increase in the magnesium and calcium loss in the urine is a constant feature of all severe cases of diabetes, and it is not unlikely that this loss renders the nervous system more susceptible to the action of toxins formed in the liver and elsewhere. The experiments of Osborne, Mendel, and Ferry lend support to this view, for they found that rats fed on a diet poor in inorganic salts, but otherwise satisfactory, eventually developed coma, and that they could be resuscitated by the administration of a mixture containing calcium and potassium phosphate, sodium chloride, and citrates of sodium, iron, calcium, and magnesium.¹³

Preventive Treatment.

If, as the foregoing considerations suggest, diabetic coma is not due to one cause, but is a complication arising from the cumulative effects of several, which result from the general metabolic failure of the diabetic organism, it is clear that treatment directed to one cause is not likely to control the symptoms, at any rate, more than temporarily, and that the only "cure" is to prevent all possible causes by so arranging the diet that (1) the patient's tolerance for carbohydrate, protein, and fat is not exceeded; (2) the total load of food is within his metabolic capacity; (3) the diet is correctly balanced; and (4) a sufficient allowance of inorganic salts is provided. Obviously the earlier in the course of the disease such treatment is commenced the better are the results likely to be and the less difficult will it prove to arrange a diet fulfilling the necessary conditions, but even with advanced cases a surprising improvement can be effected by careful dieting along these lines.

When a diabetic patient is first seen no change should be made in the character of his food. If possible he should be kept for a few days on an ordinary mixed diet of known composition and the opportunity taken to investigate his metabolism by analyses of the urine, blood, &c. The effect of excluding fat from the diet should then be tried. After a day or two on a fat-free diet the protein may be reduced by half. Subsequently the carbohydrate allowance may also be halved, then the remainder of the protein excluded, and the carbohydrate further reduced until a diet of green vegetables of low carbohydrate value only is being taken. If

⁹ Zeit. f. klin. Med., 1913, lxxvii., 384.

¹⁰ See Pauly and Boulud, Lyon Médical, March, 1917, p. 118.

¹¹ Journ. Physiol., 1910, xii., 318.

¹² American Medicine, June, 1918, p. 370.

¹³ Carnegie Institute of Washington, 1911, 156, ii., 80.

sugar is still being excreted in the urine or the blood sugar is high and serious acidosis or evidence of abnormal tissue waste persist, two or three days' "starvation" may be prescribed, but longer continuous fasts are best avoided. Abstinence from food usually has a remarkable effect, improving carbohydrate tolerance, correcting errors in protein metabolism, and reducing acidosis, so that patients apparently in a grave condition may often be rescued and put on a metabolic basis that permits of a satisfactory diet being subsequently constructed.

The building up of the diet must be gradual and be carried out in the reverse order to that outlined above—that is to say, green vegetables alone, with a gradually increasing carbohydrate content, should be allowed first, then a very limited amount of fat-free protein, such as boiled white fish or chicken, is added, more carbohydrate is next given, and later the protein is increased until the patient is in nitrogenous equilibrium. When this point is reached fat may be allowed, at first in small quantities and later in larger amounts, but the effect on protein metabolism and the utilisation of carbohydrate must be carefully watched by regular examinations of the urine and blood. It is necessary that part of the carbohydrate should continue to be taken in the form of green vegetables, the exact proportion varying according to the patient's tolerance for starchy foods. It is also an advantage if at least one serving of raw vegetable (e.g., as salad) is eaten each day. These precautions not only help to overcome the constipation from which most diabetics suffer, but also ensure a sufficient supply of the inorganic bases that are essential for proper metabolism and render the medicinal use of alkalis unnecessary.

No attempt should be made to work the diet up to a theoretical caloric content based upon the size of the individual. If this can be done without risk so much the better, but the future progress of the case should not be sacrificed for a merely temporary benefit. The diet must be arranged to suit the patient's present metabolic capacity, not his appetite; in other words, he must be taught "to eat in order to live, not live to eat." The cardinal and very common mistake of an unbalanced diet should be carefully avoided. The effect of an excess of carbohydrate soon shows itself in the urine and is easy to recognise, but the equally deleterious results of too much protein or fat are not at once so evident. The best guide to the protein limit is the nitrogen balance, and the protein allowance should be so arranged that its nitrogen content does not exceed the daily total nitrogen output in the urine by more than 1 or 2 g. So long as this ratio exists further trouble from disturbances of protein metabolism need not be feared. Fat, unbalanced by other foods, is an insidious poison for the diabetic, and every endeavour should therefore be made to keep the fat allowance at a level corresponding to the patient's capacity for dealing efficiently with other foods. For practical purposes it may be taken that the allowance of fat, at least in the earlier stages of treatment, should not exceed the allowance of carbohydrate, or at most not be more than half as much again. A higher proportion is likely to lead to subsequent difficulties, and these are certain to occur if the proportion of fat to carbohydrate is more than 4 to 1. Determination of the fat content of the blood is undoubtedly the best guide for ascertaining the optimum allowance of fat in the diet, but regular estimations of the percentage of sugar in the blood also give useful indications, for a steady increase, especially if not associated with glycosuria, suggests that too much fat is being taken.

I have recently had under my care a patient, sent to me by Sir John Tweedy owing to an eye trouble associated with diabetes, who illustrated this point very well. When I first saw him his blood sugar stood at 0.20 per cent. and he was passing 15 g. of sugar a day in his urine. After a week of treatment the glycosuria had disappeared and his blood sugar had dropped to 0.08 per cent. A week later on a diet containing 50 g. of carbohydrate and 70 g. of protein, but practically no fat, the blood sugar had risen to 0.11 per cent. He was then given fat in gradually increasing amounts up to 60 g., when it was found that the blood sugar had risen to 0.18 per cent., although there was no sugar in the urine. On dropping the fat to 10 g. but not otherwise altering the diet, the blood sugar came down to 0.11 per cent. again. A return to the previous allowance of fat was followed by a rise in the blood sugar to 0.18 per cent., but still without glycosuria.

Treatment of Cases with Coma.

So long as the exact cause of diabetic coma remains obscure preventive treatment based upon a system of dieting calculated to stay the progress of the disease as a whole is the most certain means for eliminating this, and other, complications. It sometimes happens, however, that a patient is not seen until coma has developed or its onset is imminent. Under these circumstances he should be put to bed and be kept warm with suitable clothing, hot bottles, &c. All disturbing influences should be avoided and absolute rest and quiet be insisted on. The bowels should be thoroughly cleared by one or two large enemata. If there is a history of constipation a small pill containing bile-salts, calomel, and pil. rhei co., or colocynth and hyoscyamus, may be given and repeated if necessary, but excessive purgation with the risk of subsequent diarrhoea must be avoided. Gastric lavage, if practicable, may help to eliminate toxins. Whatever diet has been taken previously it should be stopped and replaced by 2 oz. of lemon juice, and either 7 to 8 oz. of potato or $2\frac{1}{2}$ to 3 oz. of oatmeal, taken in the form of thin purée or gruel in small quantities at 3 or 4 hourly intervals over the 24 hours. If possible the starch should be dextrinised by steaming the potato for 3 to 4 hours and gently boiling the oatmeal for 5 to 6 hours. After 24 to 48 hours even this small amount of carbohydrate may be omitted for a day or two. From the first the patient should be encouraged to drink as much liquid as possible, preferably in the form of hot water, weak tea or coffee, thin broth, &c., a minimum total of 5 to 6 pints, distributed evenly over the 24 hours, being aimed at. Should so much fluid be refused, or if there is a tendency to vomiting, the balance should be administered as normal saline per rectum, or, if need be, intravenously. Intravenous injection should not be too long delayed, as there is much more hope of its being beneficial during the premonitory stage than when coma has actually developed.

It has been the custom to give large doses of alkali in coma and threatened coma, but lately Joslin has claimed that better results can be obtained if alkalis are avoided altogether and simple salt solution, or even tap water, is used for injections. According to him, if alkalis have been given previously they should be omitted at the rate of 10 g. a day. There are some cases which are undoubtedly benefited by alkali therapy, however, particularly those where there is a uræmic element in the condition, and I therefore think that if speedy improvement does not follow the measures outlined above alkaline injections should be tried. Small uncontrolled doses are useless, the only method likely to be of much avail is to employ massive doses and regulate their administration by repeated examinations of the blood by Sellards's method or by estimations of the carbon dioxide content of the alveolar air. The injections should be continued until it is clear that any acidosis, whether due to the diabetic condition or to uræmia, has been neutralised by a return to normal of the titratable alkalinity of the blood or of the carbon dioxide content of the alveolar air. The copious diuresis that follows large intravenous injections will tend to eliminate other toxins, and bleeding from the opened vein to the extent of 10 or 20 ounces will also help in that direction.

Bicarbonate of soda is the alkali usually employed for intravenous injection, although some have advocated the use of the normal carbonate, on the ground that it has a greater neutralising power; but this advantage is more theoretical than real, for while it is true that weight for weight the carbonate can neutralise more than one and a half times as much acid as the bicarbonate, the latter can be used with safety in so much stronger solution that the difference is more than counterbalanced. Observation has shown that an average adult possesses not much more than 200 g. of sodium bicarbonate, or its equivalent, in a form available for the function of respiration, and that with a deficit of 150 g. or more air-hunger and coma develop. We may therefore assume that in most cases of coma a dose of bicarbonate of soda approaching 150 to 200 g. (5 to 7 oz.) will most likely be required. It would obviously be dangerous to introduce this amount into the circulation at one dose, and the maximum that should be attempted is 50 to 60 g., in the form of a litre of a 5 to 6 per cent. solution, or $1\frac{1}{2}$ oz. of sodium bicarbonate in 30 oz. of water. The solution should be sterilised if possible, but precautions should be taken to prevent the formation of the caustic normal carbonate,

which readily occurs on boiling. If the bicarbonate solution is filled into strong narrow-necked bottles, with tightly-fitting stoppers tied in place so as to reduce the air-space to a minimum, this danger is very largely avoided, and to make sure a stream of carbon dioxide gas may be bubbled through the solution after it has cooled. In an emergency unsterilised tap-water may be used without serious risk. The solution should be injected by the gravity method very slowly, half to one hour being allowed for a litre, and it should be kept at or about the temperature of the body. It is usually necessary to repeat the injection in about six hours, and if need be it may be repeated again after 12 and 18 hours.

Cardiac stimulants are advisable at an early stage in all cases of coma or threatened coma. Digitalis, subcutaneously or by the mouth, is probably the best, but strychnine, caffeine, alcohol, ether, camphor, ammonia, and pituitary extract may also be useful. There is a natural disposition to administer oxygen to relieve the distressing symptoms of air-hunger, but it is a useless procedure, excepting for the mental effect on those who are watching, for the difficulty in respiration has been proved not to be due to lack of oxygen.

Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON THE FORMATION OF OTHER AGGLUTININS IN CASES OF MALTA FEVER.

BY L. T. BURRA, M.D. OXON.,
LATE TEMPORARY CAPTAIN, R.A.M.C.

THIS note was written with a view to its publication in June, 1916, when the work was cut short by my transfer from Malta to Egypt, but owing to circumstances which arose at that time permission to publish it was withheld. I am indebted to Colonel A. C. O'Sullivan, A.M.S., for his permission to publish it, which was granted at a later date, and of which I now avail myself.

In the course of routine examinations of patients' sera in the laboratory of the Military Hospital, Imtarfa, Malta, I noticed that in cases of Malta fever agglutinins for the *Vibrio cholera* appeared, although, according to their histories, the patients had not been inoculated against cholera and had no symptoms of cholera. I have not been able to collect sufficient cases to state that in cases of Malta fever there is always the power to agglutinate a cholera emulsion, but the occurrence of this phenomenon in six cases is perhaps sufficient justification for drawing attention to it in this note.

The routine examinations of sera for agglutinins were made on slides by the rapid macroscopic method, using dilutions of serum from 1 in 10 upwards and emulsions in normal saline of dead and washed bacteria. In three cases the sera were put up in a series of dilutions in Wassermann tubes in the usual way, and were examined after 24 hours at the laboratory temperature.

The results of my observations were that in all six cases both *M. melitensis* and *V. cholera* were agglutinated. In one case the serum when first examined agglutinated the former only; two weeks later there was feeble cholera agglutination as well, while six weeks after the first examination this serum agglutinated *M. melitensis* up to 1 in 1600 and *V. cholera* up to 1 in 200. In those cases in which I had enough serum I added to a 1 in 5 dilution of the serum an equal quantity of the emulsions of *M. melitensis* and *V. cholera* in separate tubes, examining the serum for agglutinins after 24 hours at laboratory temperature. In every case saturation with *M. melitensis* emulsion removed the power of agglutinating cholera; and in the four cases in which the serum was saturated with cholera emulsion it retained its power of agglutinating *M. melitensis*.

I am indebted to Professor Zammit for the sera of three goats which were known to be infected with *M. melitensis*, which I examined on the same lines as the human sera. All of these sera agglutinated *V. cholera* as well as *M. melitensis*, and after saturation with *M. melitensis* emulsion this power of agglutinating *V. cholera* was removed.

In no case was the serum heated, and in none of the patients was the *M. melitensis* grown from the blood, so that the evidence of *M. melitensis* infection may be considered insufficient. The point, however, may be of interest to those who have the material for further investigation, and for this reason I draw attention to it. In conclusion, I wish to express my thanks to Professor Zammit and to Surgeon Lynch, R.N., who kindly provided me with some of my material; and to Captain W. B. Alcock and Captain N. Campbell, R.A.M.C., for their advice and suggestions as to the tests which I have made.

Aylesbury.

A CASE OF ASPIRIN POISONING.

BY F. W. LEWIS, M.R.C.S., L.R.C.P.,
ACTING MAJOR, R.A.M.C. (T.).

IN view of the promiscuous way in which aspirin, often self prescribed, is taken by the general public, the following case is of considerable interest to the profession.

Patient, sergeant, U.S.A., aged 24, was admitted to the Theford Military Hospital on Oct. 25th, 1918, with the history of having been taken ill two days previously with influenza. He was a powerfully built man and gave no history of previous gastric or intestinal trouble. He stated that he had been taking aspirin capsules of his own in addition to 18 5-gr. tablets given to him by the medical orderly. Instead of keeping to the prescribed dose, he had taken them all, together with a number of capsules in the course of six hours. He did this in order to get fit quickly, as he was under instructions for France.

On admission patient was markedly anæmic, temperature 101.4° F., pulse 120. During the day he vomited undigested milk, with no trace of blood. On Oct. 26th the anæmia was more profound. Pulse 150—weak and irregular. An enema was administered with little result. The vomiting continued at intervals. On the following morning, at 5 A.M., a large quantity of blood was passed by the bowel and he rapidly became unconscious. No thought of an exploratory laparotomy could be entertained. He died a few hours later.

Post-mortem.—There was no peritonitis, and no free fluid in the abdominal cavity. The last 5 feet of the ileum was acutely congested, and the cæcum and colon were loaded with blood clots. The line of demarcation between healthy and congested bowel was very definite. On opening the small intestine it was found to be uniformly inflamed. The mucous coat had apparently disappeared, leaving the sub-mucous coat and blood-vessels exposed and eroded. Bleeding from this large area had evidently been the cause of death. The other organs were in a healthy condition.

Remarks.—Aceto-salicylic acid is known to pass unchanged through the stomach and upper portion of the small intestine, and is then converted into free salicylic acid. It is probable that this man took nearly 200 gr. of the drug into an empty alimentary canal, and that the salicylic acid formed was responsible for the removal of the whole lining membrane of the bowel in the area described. The mucous membrane of the cæcum and colon appeared to be unaffected. An inquest was held and a verdict of "Death by misadventure through an overdose of aspirin" was returned. It would be interesting to know if this possible action of large quantities of salicylic acid on the bowel is recognised, or if this case may have been due to some impurity in the aspirin.

A CASE OF STRANGULATED FEMORAL HERNIA.

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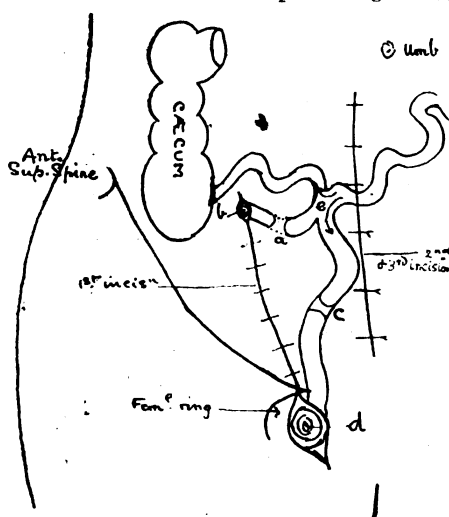
THE following case of strangulated femoral hernia seems worth recording, partly because it is unusual for such a condition to come under treatment so late and partly because several mistakes were made in the treatment, and by these mistakes it is hoped that something may be learnt.

The patient, aged 47, is the mother of nine children. She sent for her doctor on Nov. 27th, 1917, who diagnosed a strangulated femoral hernia which had existed for four days. She had been in great pain all this time, had vomited continually, and had passed no flatus, but she had not kept in bed.

First operation (Nov. 27th, 1917).—On opening the sac it was found full of offensive pus and a knuckle of gangrenous bowel, about 2 inches long, which was giving way at the

neck of the sac. The same incision was extended upwards and outwards, the deep epigastric vessels ligatured, Poupart's ligament divided, and the peritoneum opened, thus exposing well the whole damaged bowel without pulling on or in any way disturbing the parts. The strangulation was about 5 feet above the cæcum. About 5 inches of the gut were removed. An attempt was then made to get the cut ends delivered out of the wound for an anastomosis. But the mesentery was so oedematous, congested, and friable, that any further handling caused tearing and bleeding, and, what was worse, stripping of bowel from mesentery. After wasting much time in this attempt and arresting hæmorrhage, another three or four inches had to be resected where it had stripped from the mesentery, and, finally (what should have been done in the first instance) a Paul's tube was tied into the proximal gut. This was anchored to the lower end of the incision (i.e., the femoral ring) and the distal gut anchored to the very top of the incision. The patient stood the operation better than I expected. The Paul's tube held for three days. The superficial part of the wound suppurated and prevented further operation for seven weeks. In the meantime the patient lost much flesh although she took food well, and in spite of opium and bismuth, which were exhibited to delay peristalsis.

Second operation (Jan. 16th, 1918).—A vertical incision was made just to the right of the middle line. Towels were clamped to the edge of the wound by Van Houzel and Backhaus forceps. On opening the peritoneum it was difficult to identify the parts because of adhesions, which considerably delayed the operation. The distal portion of the bowel, which had shrunk to very small dimensions, was then divided at (a), about 3 inches from where it was anchored to the skin (b), and both ends closed. A lateral anastomosis was then made to the proximal gut at (c), about



8 inches from where the latter was anchored to the femoral ring (d). The distal gut was so small and the proximal so large that, fearing symptoms of obstruction, the division of the latter at (c) was left for the subsequent operation. I thought that by plugging the orifice at (d) the faeces could be induced to go entirely along their new channel, and that possibly a third operation might not be necessary. This was undoubtedly a mistake.

The patient suffered no shock from the operation, but had severe enteric bronchitis with a marked rise of temperature. After 14 days, by the aid of enemata, about half the fæces appeared in the stools. After that the amount in the stools steadily declined. Plugging the orifice was useless. The plug was forcibly ejected after much pain. Saline aperients, which the pharmacologists tell us act chiefly on the lower bowel, were tried, but only increased the amount on the dressings. The patient's skin got very bad. She became emaciated, listless, and depressed.

Third operation (Feb. 18th, 1918).—The abdomen was opened through the scar of the last operation, much care being taken to shut off the skin, which was very swollen and eczematous from being in constant contact with faeces. This operation proved the most difficult of the three on account of the massive adhesions. It was impossible to identify the piece of bowel for severing except by pushing a long instrument into it through the opening at (d) and feeling for the end inside the abdomen. It was divided about 5 inches from its opening on the surface. The end of the bowel was then closed—silk for the mucous membrane and catgut Lembert sutures for the peritoneal surface. I used catgut because I feared a possible stitch sinus. But the catgut must have

slipped and faeces in abundance appeared in the wound on the third day. The mesentery of the detached piece of bowel (c-d) was next ligatured and divided. This piece of gut was then forcibly dragged out of the wound, leaving a large hole at the site of the femoral ring, admirable for draining. The central wound was then closed and a drainage tube placed in the old femoral ring. The patient was so well after the operation that on the third day I risked ordering an enema. This was most disastrous. Faeces again appeared in the wound and I thought I had lost my patient. However, this was the only time we saw them. From that time on she never looked back again. Liquid paraffin was the aperient used on all occasions.

The little portion of bowel (a-l) has never been detached, and when she left the hospital it formed a small sinus 3 inches long, occasionally discharging a little mucus. Subsequently this has quite dried up. No special measures were taken to repair her femoral ring and yet there is no hernia now. Considerable praise is due to the sister in charge of the case for not infecting the central incision after the second operation. The patient cooperated well, too, telling the nurse directly she was soiled.

She is now at her work again and feels no abdominal discomfort, and has even discontinued her liquid paraffin, which was such a stand-by earlier. She consulted me about two months ago because she thought she was pregnant.

Reviews and Notices of Books.

The Operative Treatment of Chronic Intestinal Stasis. By Sir W. ARBUTHNOT LANE, Bart., C.B., Consulting Surgeon to Guy's Hospital and to the Hospital for Sick Children, Great Ormond-street. Fourth edition, revised and enlarged. London: Henry Frowde and Hodder and Stoughton. 1918. Pp. 328. 20s. net.

EVERYONE who has devoted any attention to the matter must recognise that to Sir Arbuthnot Lane we owe in great part the increased attention now given to the dangers attendant on the too prolonged retention of faecal matter in the bowel. He it was who first drew attention to the risks of absorption from the intestine of the products of the activity of colon bacilli and of other micro-organisms; and it was he who first laid stress on the importance of kinks in the bowel produced by adhesions as the causes of intestinal stasis. And so clearly has he put forth his facts and his inferences, so carefully has he marshalled the data on which he founded his theories, that now those who accept his conclusions are continually increasing in number, and yearly more and more surgeons base their practice on his teachings. We do not say that Sir Arbuthnot Lane may not have pushed his theories too far; he may have thought that their application was wider than it really is, but even allowing for the over-enthusiasm of the discoverer there can be no doubt that he has brought to our notice facts that were almost unknown or ignored before, that he has pointed out a potent cause of much chronic ill-health, and that he has indicated the direction which treatment must take if these evils are to be overcome.

This book is not the unaided work of Sir Arbuthnot Lane, for he has many coadjutors. Dr. Alfred Jordan has contributed a most important chapter on the investigation of chronic intestinal stasis by means of the X rays; he shows the immense value of the additional information that may be obtained by the use of this method, so that the surgeon shall be in a position to act with the best effect when the abdomen is opened. Dr. Nathan Mutch has supplied a short but valuable chapter on the bacterio-chemistry of the small intestine and a much longer chapter on chronic streptococcal infection. Professor Arthur Keith has written on the great bowel from the anatomist's point of view, and Professor J. G. Adami has furnished a chapter on intestinal stasis and intoxication. The relation of intestinal toxæmia to loss of accommodative power has been explained by Mr. Ernest Clarke, and Dr. Leonard Williams insists on its importance from the medical standpoint. Major White Robertson has described the blood picture of this condition, and Mr. Harold Chapple has written on the gynecological aspect of the stasis. The connexion of pyorrhæa with stasis in the bowel has been pointed out by Mr. Harry Forsyth. It will thus be seen that Sir Arbuthnot Lane and his collaborators have traversed the whole field of intestinal stasis; they have collected together a vast corpus of information all bearing on the subject, and the reader cannot fail

to acknowledge that there is a large amount of truth in the claim that intestinal stasis is a potent factor in disease, and that the prevention and removal of the stasis is of vital importance. The veriest sceptic, if indeed there be any such, cannot rise from the perusal of this volume without recognising that the matter deserves the closest study. To all medical men we commend this book, for it gives a full and faithful presentation of this important subject.

A System of Clinical Medicine. By THOMAS DIXON SAVILL, M.D. Lond. Fifth edition, thoroughly revised. London: Edward Arnold, 1918. Pp. 948. 28s. net.

THE issue of a fifth edition of Savill's *System of Medicine* is surely an evidence of its increasing popularity. The fourth edition was issued in 1914, and reprinted in 1916. The present edition has been thoroughly revised, notably the chapter on diseases of the nervous system by Dr. Harry Campbell, and some of the sections, such as those dealing with diabetes mellitus and syphilis, have been entirely rewritten. There are many additions, amongst which may be mentioned spirochaetosis ictero-haemorrhagica, purulent bronchitis, and trench fever. So much for a short account of the more important changes in the new edition which may be of interest to those who are already acquainted with the work. To the less fortunate we may give a short description of Dr. Savill's method of dealing with the study of disease, or rather with the study of disease as manifested by any one particular patient, for this text-book is essentially clinical in its outlook. The author does not describe each disease separately, as is usually done in text-books, but the order of sequence is, as he says, that which "should be adopted in the examination of the patient," the principle throughout being to trace "from effect (symptoms) to cause (the morbid cause in operation)." To quote the author again: "Each chapter is divided into three parts. Part A treats of the *symptoms* which may indicate disease of the organ or region under discussion, the fallacies incidental to their detection, and gives a brief differential account of the various causes which may give rise to those symptoms. Part B treats of the physical signs of disease in that organ and the various methods used to elicit them. Part C, which constitutes the major portion of each chapter, is prefaced with a *clinical classification* of the various maladies affecting that region and a summary of the routine procedure to be adopted; this is followed by a series of sections dealing with the several *diseases* arranged according to their clinical relationships. For example, in Chapter III., on the heart, Part A describes and differentiates the various causes of breathlessness, dropsy, palpitation, præcordial pain, and the other symptoms which may be indicative of heart disease; Part B describes percussion, auscultation, and other methods of examining the heart; and Part C deals *seriatim* with the various cardiac disorders, classified and arranged on a clinical basis." To the busy practitioner the utility of such a work is obvious; in a difficult case he has but to turn to the chapter dealing with the affected region, and he finds at once a simple method of differential diagnosis. But the work is especially helpful to the student newly arrived at that stage in his curriculum when he is faced with the problem of a particular patient and is obliged to carry out his examination and make his diagnosis on its result. This text-book will help him on from stage to stage, and if in the end the diagnosis is still in doubt he will have learned how to observe accurately, how to reason clearly and correctly, and by balancing the evidence will at least be able to understand the possible diagnoses which his teacher will discuss in due course.

The Australian Army Medical Corps in Egypt in 1914-15. By Sir J. W. BARRETT, K.B.E., M.D., F.R.C.S., Temp. Lieutenant-Colonel, R.A.M.C., and Lieutenant P. E. DEANE, A.A.M.C. Illustrated. London: H. K. Lewis and Co., Ltd. 1918. Pp. 259. 12s. 6d. net.

THIS book is very much of the nature of an expanded report on the working of No. 1 Australian General Hospital at Cairo and the Australian Branch of the British Red Cross Society. Sir James Barrett combined the duties of consulting oculist and aurist and registrar of the hospital, and executive officer of the Australian Branch of the Red Cross Society; Lieutenant Deane was quartermaster to the hospital. The presence of this Australian Hospital in Egypt was especially fortunate on account of the

sudden influx of wounded from the Dardanelles, which necessitated the expansion of the hospital from one of 520 beds to a group of hospitals providing accommodation for 10,500 patients. The story of the expansion is interestingly told, although perhaps the experience is not so unique as the authors imagine; very much the same difficult course of events occurred at Alexandria where the problem was tackled by the R.A.M.C. The book brings up all the various problems which have beset our armies elsewhere—the recruitment of the unfit, the drink problem, the venereal diseases problem. We are in debt to the authors for their frank account of events; their extensive experience of the methods tried to prevent venereal disease lends weight to their criticism of the new constitution of the Australian Red Cross Society, which does not allow of the spending of money for the maintenance of social clubs for soldiers:—"Why not supply for the benefit of the men places of entertainment, with music, refreshments, and the like, similar to, and better than, those which the prostitutes supplied, but minus the prostitute?" The whole-hearted co-operation of the Australian medical forces with our own and the French is incidentally revealed; Australia in the early days in Egypt provided motor transport for the whole of the wounded and gave away 75 per cent. of their Red Cross stores to hospitals for British or French troops. Over 100 pages of the book are given up to a detailed account of the work and criticism of the functions of the Australian Branch of the Red Cross Society in Egypt. The numerous photographs illustrating the book are exceptionally good; the three maps included are useful. The book is apparently intended for the Australian lay public; although it is not a contribution to the study of Egyptian medicine it will be read with much interest by every medical man who has served in Egypt.

JOURNALS.

Revista Española de Medicina y Cirugía. Provenza 273. Barcelona. Pp. 50. 2 ptas.—We have received the November issue of this review, being the fifth monthly number since its first publication in 1918 at Barcelona under the editorship of Dr. Francisco Tous Biaggi. It seems to us a practical and up-to-date addition to medical literature, such as is wanted not only in Spain but in other countries. This number contains an article on Technique in Microscope Work by Dr. Pujula, in which he explains his methods of staining sections of nervous tissue by nitrate of silver and Kopsch's bichromic formol and the use of bichromated gum arabic in mounting. Dr. Esquerdo contributes a paper on the Treatment of Placental Remains in the Uterus. From the editorial pen there is a lucid summary of our present knowledge of the etiology, symptoms, and treatment of the so-called Spanish influenza, of which our Iberian colleagues had an early and abundant experience; their practical acquaintance with this epidemic is further shown in another series of short articles dealing with the disease from various points of view, by various well-known scientists, such as Dr. Farreras, Dr. Freixas, and Dr. Moragas, chief of the bacteriological laboratory of the Santa Cruz Hospital. The opinion of the latter observer is worth quoting, being to the effect that in the present epidemic there was something more than Pfeiffer's bacillus, the pneumococci, the diplo-streptococci and accessory bacteria which he isolated from his cases, as the initial cause of the infection; that it seemed as if the influenzal infection, benign in itself, as seen in the earlier cases of the epidemic, prepared the soil for the colonisation of the accessory bacteria which, by transmission from one patient to another, acquired an unusual virulence and gave rise to complications of extreme gravity. These views are of interest to compare with those expressed in our leading articles on the same subject in last week's issue of THE LANCET and in the present number. It would seem that in many countries work is proceeding on similar lines and that the results obtained point to similar conclusions. Another section of the publication is devoted to abstracts from other journals, both Spanish and foreign, the latter part being very copious, and embracing all the chief medical periodicals of the world, over 20 pages arranged under various headings being given up for this purpose. Another portion is dedicated to reviews of books and a list of recent publications. One interesting feature of the *Revista Española*, which should not be allowed to pass without attention being drawn to it, is that each original article is accompanied by a *résumé* in French, a delicate and thoughtful concession for the benefit of those of its readers who may not be conversant with Spanish. We heartily congratulate the editorial staff on the excellence of their new medical periodical and wish it every success.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD,
PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE
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AND

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MÉDECIN-MAJOR DE 2^{ME} CLASSE; CHEF DE CLINIQUE
À LA FACULTÉ DE PARIS.

GUNSHOT CONCUSSION OF THE SPINAL CORD.¹

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AND

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CONCUSSION of the spinal cord had already been an object of study before the present war era, but authors were only able to devote themselves to a description of the anatomical and clinical manifestations following on direct blows to the vertebral column or on falls from a height. Experimentally it was also possible to observe the lesions produced by successive blows on the vertebrae. We may recall the studies which had already established the existence from the clinical and anatomical point of view of concussion of the nervous centres, notably of the cord, because we wish to limit this account to the description of functional disorders and alterations in the cord which occur in those who have been subjected to gunshot injury, but in whom the cord has not been directly damaged by the missile. We are speaking here of traumatism due to the bursting of shells near the patient, or of wounds produced by projectiles which have not struck the cord itself.

I.

Concussion of the cord may be divided into two categories: (a) Indirect concussion, resulting from the bursting close to the patient of large shells, and in which the symptoms are caused by sudden variation of pressure. (b) Direct concussion, produced by the impact on the vertebral column or at a certain distance from it, of various projectiles (bullets, shell splinters, &c.), but in which the cord and its membranes have not been damaged by the missile. Such is the distinction which we have endeavoured to make in our previous work on this question. In both cases the spinal lesions are associated with the agitation of the nervous centres which have not been directly injured by the missile.

(a) *Indirect concussion.*—Indirect concussion includes those cases in which spinal paralysis occurs as a result of the explosion of projectiles of large calibre, and in which it is impossible to find any external wound as the explanation. From the beginning of the war these facts arrested the attention of medical officers; they have been attributed to the action from a distance on the central nervous system of the "wind from the bullet," but it is necessary to subject these observations to a critical and careful study in order to discriminate between disorders of organic origin and those of a psycho-neuropathic nature.

In France the cases of Sencert, of Ravant,² of Guillaud,³ of Heitz,⁴ of Babinski,⁵ of P. Marie and Chatelain⁶ have put beyond a doubt the existence of motor and sensory disturbances due to organic lesions of the cord in patients showing no evidence of any wound, but who were within the range of an exploding shell. A. Léri⁷ has collected most of these facts in a critical study.

Functional disorder may supervene immediately after the explosion. The patient is unable to use his limbs, he has the impression that they have been carried away, whilst at the same time he often complains of severe pain in the back. Sometimes disorders at first little noticed become accentuated some hours later. On the other hand, in some cases paralyzes, which before had been general, are seen to lessen and to become limited to certain limbs (Lhermitte⁸). A. Léri⁹ has insisted lately on the presence of "delayed" concussion, in which several days and sometimes even weeks after the explosion the first important gross symptoms of organic lesion have made their appearance.

The spinal syndrome following concussion due to explosion generally assumes the aspect of a quadriplegia or a paraplegia caused by transverse myelitis. The paralysis is accompanied by changes in the tendon reflexes, by

disturbances of sensation, weakness of the sphincters, and trophic phenomena (bed-sores), such as are found in organic spinal lesions. But it should be borne in mind that there may be partial paralysis, anaesthesia of abnormal distribution, and retained reflexes which make the diagnosis doubtful, at least at first, because the hypothesis of simple functional disease is not easy to eliminate. The organic signs then only develop slowly. Such are certain muscular atrophies indicating an alteration in the grey matter of the cord, and giving, on electrical examination, the reaction of degeneration. These amyotrophies, moreover, tend to improve.

The evolution of these paraplegias or partial paralyzes occurring after concussion varies according to the extent and gravity of the lesions. Relaxation of symptoms or their transformation into others is fairly common. For example, paralysis, flaccid at first, tends to become spasmodic. Nevertheless, the prognosis often continues quite favourable. A fatal termination, however, may occur either during the early hours or days as the result of shock, or later from pulmonary complications or various infections.

It is difficult to follow completely the history of indirect spinal concussion caused by explosion, because the morbid anatomy, and, above all, the histology of the lesion has not yet been investigated. Lumbar puncture, it is true, has shown in some cases the presence of hæmorrhage into the cerebro-spinal fluid or the remains of hæmorrhage (albuminose, xanthochromia), which has induced certain authors to deduce that spinal lesions are probably hæmorrhagic in type. There is no doubt that hæmorrhagic foci are present in many cases, but at the same time we cannot exclude the view of Roussy and Lhermitte,¹⁰ who hold that in a certain number of cases the nervous agitation caused by the deflagration has produced a direct traumatism of the vertebral column, and that the spinal concussion will therefore be of the same nature as the second category of spinal lesions, to which we have given the name of direct concussion.

The following has been urged in support of the hypothesis. The concussed man is often thrown to the ground, blown up, bruised, or buried, so that the rôle of agitation is not easy to distinguish from that of direct injury. Moreover, even when a single explosion can be shown to be the cause it occurs in the most typical cases behind the patient, who gathers the impression of having received a blow on his back or loins (Léri). There would thus be produced a sort of blow on the vertebral column, and we know as a fact that in these patients ecchymoses do occur in the limbs and certain other parts of the body exposed to the deflagration, which, acting like a blow, causes hæmoptysis, hæmaturia, and the like. It is possible that the same may hold good in concussion, or that the blow caused by the explosion is superadded to the phenomena which accompany atmospheric compression or decompression—factors often brought in to elucidate the pathogeny of concussion from explosion. Roussy and Lhermitte,¹¹ from a study which they have made of these symptoms, have formulated a theory which brings the symptoms of indirect concussion into close association with those of direct concussion. The impact—violent and limited by the edges of the cone of compressed gas to the spine or paravertebral region—would be comparable to the impact of a projectile. In each case, the authors say, the impact is transmitted to the nervous or spinal elements by the cerebro-spinal fluid, the sole difference being that in direct concussion the immediate traumatic agent penetrates and bruises, whereas in concussion caused by pure explosion there is commotion and agitation only.

It appears, then, that the study of direct concussion ought especially to give us interesting information, seeing that it appears to resume in a more general way the story of spinal concussion.

II.

(b) *Direct concussion.*—In our first study of direct spinal concussion (October, 1915) we demonstrated that the passage of war projectiles through the vertebral canal or its imme-

diate neighbourhood (fracture of the spinous processes, for instance), even when the dura mater is not injured, leads, by the violence of the impact, to a series of phenomena suggesting a lesion of the spinal cord. Further, direct concussion of the cord may result from the passage of a projectile into the spinal muscles or from the impact of neighbouring bony surfaces (ribs, spinous processes, scapula) on each other. This is direct concussion as a result of impact at a distance from the spine. The clinical phenomena are the same whether they result from indirect concussion (at a distance from the spine) or from direct (by traversing the spine).

Spinal lesions always attain their maximum intensity at the level where the violence is applied, and, of course, the disturbances observed depend on localisation of these lesions at different levels of the spinal cord.

We shall now study these disorders according to the part injured.

Cervical region.—M. Pierre Marie and Madame A. Benisty¹² have described the *transient quadriplegia* which follows injury to the cervical region; they have also pointed out the frequency of spinal hemiplegia of the concussional type which usually changes to brachial monoplegia. We have seen many cases of *permanent quadriplegia* produced by concussion in the upper cervical region. On a stage of flaccid paralysis of the four limbs there follows a more and more marked tendency to spasm and the paralysis becomes complicated by sensory disturbances, both subjective as well as objective, of spinal or radicular origin. In three cases a Claude Bernard syndrome of cervical type was present, and in one case the Claude Bernard-Horner unilateral syndrome made its appearance.

We have also seen a *primary brachial monoplegia* occurring both as a flaccid and secondarily spasmodic type; this monoplegia is usually associated with subjective and objective sensory disturbance, of radicular distribution, sometimes very obstinate.

Brachial diplegia is one of the most curious of the clinical types of cervical concussion. It occurs early as a sequel to certain injuries of the nape of the neck (transverse retro-vertebral bullet-tracks). The upper limbs are from the first completely paralysed, even while the lower limbs remain unaffected, and it is not without astonishment that some days after the injury the wounded man is to be seen standing and walking about, whilst his upper limbs, still completely paralysed, hang inert at his sides. Among the most characteristic symptoms of this clinical type we may notice shooting pains of radicular type and disturbances of sensation, especially concerning deep sensibility and tactile sense, with greatly increased interval at which compass pricks can be separately discerned, and even after the patient has recovered adequate movement of the hands the astereognosis persists. Finally we must add, to complete a very special clinical picture, frequent want of coördination of the movements of the lower limbs noticeable in the erect attitude and becoming manifest in the upper limb when movement reappears (asynergy, dysmetry), all manifestations of cerebellar nature.

This concussional brachial diplegia appears to us always to terminate favourably; movement returns little by little in the paralysed limbs, but their functional use is disturbed for a long time by asynergy or dysmetry of cerebellar type as much as by the ataxia associated with alterations of deep sensation. These last phenomena persist long into the remote phase, when the recovery of motor power is nearly complete. In two cases which we studied these cerebellar disturbances existed without paralysis or any important disturbance of sensation. Such a patient presents the staggering, tipsy gait of cerebellar lesion, whilst his movements are sudden and spasmodic, and examination confirms the presence of spasticity. This cerebellar spasmodic form of spinal concussion of the cervical region appears to us to be of favourable prognosis, for the incoördination, though well marked, passes off rapidly.

Besides these well characterised types we must include a series of *abortive forms* which vary according to the predominance of one or another symptom.

Dorsal region.—Concussion of the dorsal region gives rise to a symptomatology of which the gravity is variable from a paresis of the lower limbs lasting but a short time to a complete paralysis such as occurs after complete section of the cord, along with all intermediate types. Generally the symptoms come on with striking rapidity; motor and sensory functions apparently much involved are re-established, at least to some extent, after some weeks. Flaccid paralysis

from the beginning becomes transformed in these as in the cervical forms without much delay into spasmodic paraplegia without gross sensory changes. The bladder and rectum are generally involved.

Lumbar region.—We have seen only very few cases of direct concussion of the lumbar region. Their symptomatology depends upon the height of the lesion and the addition of radicular lesions to the spinal. There is no need to insist on a common clinical picture, which is that of compression or division of the cord, capable of easy analysis.

III.

Morbid anatomy.—Cerebral and spinal concussion are regarded by most authors as based upon an anatomical substratum, of which hæmorrhage, associated or not with softening, is the usual lesion. We have been at pains since 1915, by histological examination of numerous cases, to combat this opinion, founded more on imagination than on exact anatomical examination. Hæmorrhagic foci are seen, but less frequently even than meningeal hæmorrhages, and they are not the essential and characteristic lesion of concussion. Direct concussional agitation of the nervous system leads to changes of two kinds, *diffuse* and *local*, both of the necrotic type.

Local changes.—These we have described under the term *insular necrosis*. They consist in more or less extensive foci, generally situated exactly at the level of the point of application of the injury, whether this be actually vertebral or in the vicinity of the vertebral column. In these foci the nervous elements—axis cylinders, myelin sheaths, and nerve cells—are in process of destruction or already completely transformed, whilst the neuroglial elements are in process of proliferation and new blood-vessels are being formed. The whole appears to be a process of pure necrosis without either thrombosis or hæmorrhage. Later on proliferation of the fibrillary neuroglia proceeds and disposes of the last remains of the granular bodies. In some very severe cases the interstitial elements themselves die and the focus is absolutely necrotic. The tissues of the focus are absorbed and a cavity is formed, surrounded by a neuroglial network. This observation is not devoid of interest; the appearance of the cavities in syringomyelia exhibits the most marked analogy with the loss of substance occurring in concussion.

Diffuse changes.—The diffuse changes which we have described under the term of acute primary degeneration of the spinal tracts are apt to elude observation, and can only be studied properly by the silver method and in longitudinal sections. The axis cylinders are then easy to see broken up in larger or smaller fragments, pea-shaped or moniliform. The nerve fibres have for the most part lost their parallelism, they are retracted, curled on themselves, and cross one another. Around the broken fibres are grouped the granular bodies of neuroglial origin, containing in their protoplasm the debris of axis cylinders and amœboid cells with protoplasmic processes dissociating the myelin fibres which surround them.

The structure of the grey matter is not easy to make out. The ganglion cells are loaded with lipochromes, and, above all, the protoplasm appears full of chromophile granules fused in large irregular lumps. This change appears to us characteristic of spinal concussion.

We may add that the central canal is often dilated between constrictions, and there is often desquamation or proliferation of its epithelium; curiously enough, the fibres of the roots take part in the process of acute primary degeneration noted higher up in the fibres of the cord.

We consider, then, that the anatomical lesions, of which we have here given a general picture, and which we have described elsewhere at length, are of a type so distinct that they merit a place apart in the record of the morbid anatomy of spinal lesions. The results of these inquiries are of great interest because they show that spinal concussion is not, as is generally supposed, dependent upon so simple a change as hæmatomyelia, but can only be regarded as a complication of changes occurring in the spinal cord and originally quite distinct.

We conclude further that concussion of the spinal cord, and especially direct concussion resulting from impact on the vertebral column or in its neighbourhood, should, from its etiology, its clinical course, and its morbid anatomy, be assigned a place apart in war neurology. Its history is still incomplete, but we thought it would be of interest to surgeons and physicians to have pointed out to them at this stage the principal features, for the condition deserves to be better known and not to be confused with the other common

traumatic changes in the cord on the one hand, or with functional nervous disorders on the other hand, in view of the very different prognosis and treatment needed by these diverse spinal syndromes.

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CONTRIBUTION TO THE STUDY OF THE MANIFESTATIONS OF EMOTIONAL SHOCK ON THE BATTLEFIELD.

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Many observations have been published dealing with mental disorders or nervous troubles following on the emotions experienced on the battlefield. In nearly all these cases the connexion between the mental and nervous troubles observed and the emotional shock which has produced them has been established on the evidence of the patient. But experience has shown us that in most cases the man has given no account of the first manifestations of his emotion. We are also aware how rapidly in the light of reflection—either spontaneous or produced by systematic questioning—the ideas which the man has about what has occurred to him become changed. If we add that in many cases the man declares that he lost consciousness it will be readily understood how difficult it is to establish the origin of mental and nervous troubles following on emotion, especially emotional shock.

The observations which recount the phenomena presented by soldiers from the moment at which the emotion occurred until their return to the normal state have, in my opinion, an entirely different value. These observations show, in the first place, that many of the disorders attributed to concussion are really manifestations of emotion; and, on the other hand, they establish the relationship between phenomena observed in certain soldiers behind the lines and at army dépôts, and the quasi-instantaneous manifestations of emotional shock to which men on the battlefield have been subjected. Consequently they help, to some extent, in unravelling the nervous and mental troubles seen during the days which follow the emotion, and which are difficult of interpretation when their origin is unknown. The same observations also explain, in a measure, the differing values placed by neurologists on phenomena of the same origin, to be explained by the fact that they have seen their patient on the battlefield only and have not followed the development of the first phenomena shown; or else their observations have been made behind the lines or at dépôts where they have only seen secondary and late phenomena and not the initial stage. These neurologists are talking of two consecutive and differing aspects of phenomena having the same origin.

Account of Case.

In the account which follows it has been possible to watch the man from the moment of infliction of the emotional shock to the instant at which the phenomena following the emotion disappeared. The physical and mental disturbance lasted about a fortnight. All phases have been noted.¹

¹ In France various regimental medical officers (Volvenel: *Progrès Médical*, 1918; Oberthür et Duroselle: *Revue Neurologique*, 1916; Dide: *Emotions*, Alcan, éditeur, 1918) have published observations made *separately* on the field of battle.

A—, 11th Comp., 98th R.I., aged 23 years. On active service for two years. Not alcoholic. Had not been overworked. The regiment had just had a long rest. Had never suffered from concussion.

On August 20th, 1917, at 4.35 A.M., while his company was advancing to take A— Wood, a shell of medium calibre fell on the edge of the trench whence they were starting. It slightly wounded some of them and affected another without touching him, without even throwing him to the ground, but in such a way that he was unable to follow his comrades to the assault. I was a few dozen metres away, and being warned at once ran to him, less than 5 minutes elapsing from the fall of the projectile to the moment at which I reached the man. He was sitting at the bottom of the trench, some yards from where the shell had fallen. He was trembling all over. It was impossible to get a word from him except, "Oh, my ears!" I tried to help him, but he paid no attention. I tried to make him stand up, but he remained inert. But it was "the hour H—." The men were attacking. Some had already fallen and I could not remain with A—. I said to him, "Go to the aid-post of the battalion as quickly as you can."

When I returned to the aid-post at about 10.45 A.M. my man was there. The orderly said to me, "He came in 5 hours ago." But from the trench where he had been affected to my regimental aid-post in the ravine of C— was at least 1200 metres. Be-ides, he had to pass the battalion aid-post. It had not, therefore, taken him long to come.

Examination on August 20th at 11 o'clock—that is to say, 6½ hours after the shock. I put a certain number of questions to him; he answered slowly after reflection, but precisely. He gave the following information: "It was 4.30 A.M. when the shell fell. I believe it was a '105.' It fell half a metre from me on the edge of the trench. Two of my comrades were wounded. One was wounded in the face. They are gone. I do not know what has become of them. I lost consciousness, but not for long. I do not know exactly for how long. When I came to myself I was trembling. Some men were passing who accompanied me to the aid-post of the battalion. I did not know where I was. I followed the stretcher-bearers in order to get here—i.e., the regimental aid-post."

Condition at the moment of observation.—Appearance dull and tearful. Pulse 110, respiration 36, although he had been lying down for some time. There was a fine tremor of the hands, but sufficiently coarse to be seen at a distance. His body did not tremble. He complained of a deep pain in his ears. He was conscious of whistling and buzzing. Auditory acuity diminished; he could hear the speaking voice at half a metre. Tendon, cutaneous, and pupil reflexes normal. Sensation normal. No contraction of the visual field.

I escorted him to the regimental aid-post, where he lay on a hanging stretcher covered by a blanket. The rest of the day of August 20th, the night of the 20th-21st, the day of the 21st, he did not stir either to eat or drink (refusing what was offered to him) or to urinate.

August 21st: Still trembling; still dull. He only answers slowly, as if with great effort, the questions put to him. Pulse 120, respiration 42. Blood-pressure: Systolic 135, diastolic 90. Same state of auricular apparatus. As he had not passed water since the morning of the 20th the hypogastric region was percussed out. A suprapubic dullness was present. He was asked to pass water. Micturition took some time. He succeeded in passing some grammes of urine, which examination showed to be normal. Lumbar puncture; cerebrospinal fluid normal. (The lumbar puncture was carried out after retention of urine was discovered.)

August 24th: Has completely emptied his bladder this morning—about 100 g. of urine. Trembling much less. Pulse 110; respiration 42. Bare in the same condition. Appearance less dull. It was easier to make him answer, although it still took a long time to get anything out of him.

In order to estimate his intellectual activity, we asked whether he had written home. He said that he had not, because, in the first place, he was trembling too much, and also it was not long since he had written. Usually he wrote every three days, and he had written before going into the line. "When we said to him: 'But that is five days ago, you should have written,'" he answered: "I did not think that we had been so long in the line."

He had lost count of time. He thought that it was July, whereas we were in the month of August. We gave him a paper to read. He read with difficulty, without fluency, and very differently from the way in which he read afterwards. After reading a few lines we asked him what he had read, but he was unable to say. We made him count up to 20, which he did slowly and with difficulty. We made him count from 100 to 120, which he did still more slowly. Sometimes two or three seconds elapsed between two consecutive figures. We gave him some sums to do, addition, subtraction, and multiplication, which he did correctly, or nearly so. These he now took a long time to do and all were incorrect, even addition and subtraction. In these the results of the first two columns of addition and subtraction were correct, but those of the other columns were wrong. The results were wrong when he attempted addition and subtraction of more complicated figures. Also they were wrong because each time he had forgotten to carry. He was unable to fix his attention.

August 26th: Reading more freely than on the 24th. Counts without stopping between the numbers. Knows which month it is. Cannot remember the meaning and the words of a sentence which he has been made to copy. We again made him do the same sums he had done before. He did them very slowly. All were wrong.

August 30th: Respiration 25. Still trembled slightly, especially in the right hand. Was, however, able to write home on August 28th. The condition of the ears was improved, even though the whistling and buzzing persisted, especially in the right ear. He is fully aware that it is the month of August, and that the attack was carried out on August 20th. He counts up to 20 in 7 seconds. It takes him 15 minutes to do the sums. They are still wrong, but the mistakes are fewer.

Sept. 4th: Respiration 26. Blood-pressure: Systolic 105, diastolic 70. The trembling has disappeared even in the right hand. The ear condition is still better. He suffers no longer; he is still a little annoyed at times by the buzzing, and auditory acuity is not normal. He has recovered his appearance. He no longer has the dull air which he had. He writes home every day and occupies himself in one way or another. When he was told to come in to be examined he was looking for wood to make a door to the aid-post. He did the sums in 5 minutes 25 seconds. The addition was right. There was one mistake in the subtraction and one in the multiplication. Returned to duty.

Oct. 16th, 1917: Has been on duty since the day he joined his company. Intellectual activity normal. Did the sums as described above in 6½ minutes. The addition was correct; there was one mistake

in subtraction and two in multiplication. The ear condition was not yet quite normal. He complained of buzzing in the ears, especially in the evening. He could not hear the watch ticking at more than 20 cm. from the right ear. Pulse 72. Respiration 24. The trembling had disappeared.

Discussion of Causation.

Before going further, the following question at once arises. To what cause are we to attribute the troubles which developed in A— immediately after the explosion of the projectile which fell on the edge of the trench where he was awaiting the assault?

There can be no doubt that A— was the victim of a labyrinthine concussion. It is to this that we must attribute the disturbances of hearing, the deep and diffuse auricular pain. But are we to regard the other phenomena as evidence of cerebral concussion or of emotion?

In my opinion this man is suffering from emotion and not from cerebral concussion. He did not lose consciousness or, at least, entire consciousness for a moment after the shock due to the explosion, and was far removed from the state of consciousness of a man struck down by apoplexy or by cerebral concussion.² I saw him a few minutes after the explosion of the shell. He was sitting, not lying, in the trench, trembling, and his expression was at the same time dull and lacrymose. He was groaning: "Oh, my ear!" On the other hand, questioned six hours after the shock, he showed that he remembered the circumstances of the occurrence. He said to me: "It was a '105,' which fell on the edge of the trench and slightly wounded two of my comrades." And what is more, he had understood the order which I gave him: "Go to the aid-post at C—," and half an hour afterwards he was there. It was 1200 metres from the trench to this aid-post, and the ground was incredibly cut up by the shells. A man suffering from concussion, who has lost consciousness, who is "knocked out," who is in transient or prolonged coma, does not behave like this.

Here, on the other hand, are some details of the observation of a man suffering from slight concussion whom I had the opportunity of seeing about 20 minutes after the shock. He was struck on August 19th in a trench at W—, about 200 yards from my aid-post. He arrived escorted by two comrades. His face was black with smoke. In giving an account of himself he said to me: "I came out of the dug-out and sat down on a windlass. Then, without knowing why or wherefore, I found myself on the ground. There I had to remain for a while. When I began to come to myself I was surrounded by smoke. I thought it was gas."³

Now, although this man had lost consciousness for a very short time, he was totally unable to give an account of what had happened to him. Loss of consciousness in the man suffering from concussion was totally different from the loss of consciousness which occurred in the case we are discussing immediately after the explosion of the shell. Therefore it is not admissible to say that A— is suffering from concussion, whilst at the same time he exhibits phenomena which, taken as a whole, are characteristic of emotional shock—viz., trembling, tachycardia, and tachypnoea.

Nevertheless, two objections can be made to this point of view: (1) our man showed evidence of labyrinthine concussion; (2) he himself described the state in which he was immediately after the shock as loss of consciousness.

Let us now discuss these two objections.

(1) The fact that a man suffers from labyrinthine concussion by no means implies that he is suffering from cerebral

concussion. Cerebral concussion is one thing, labyrinthine concussion another. One or other may exist alone. Cases of labyrinthine concussion without cerebral concussion occur frequently. Here is one which I saw from the very moment at which it was produced. A sentry and my assistant medical officer F— were looking through a loop-hole at an advanced post, their heads close together. The sentry saw a *boche* at a loop-hole opposite about 30 metres away. He brought his rifle to his shoulder, pointed it in the direction of the enemy and fired. F— turned away quickly, putting his hand to his left ear. At the report he felt a severe pain in his left ear, after which he heard nothing more in this ear. A moment afterwards he perceived a very sharp whistling. All that day and the next the whistling remained, and the deafness persisted. It was nearly a week before the trouble disappeared. There was in this case auricular concussion without cerebral concussion. I may add, also, without emotion.

(2) As to the statement of the patient that he had lost consciousness, it is not enough to justify the doctor in concluding that the man lost consciousness in the same sense as a patient suffering from cerebral concussion. I saw the man at the time he declared that he had lost consciousness, I enquired in what his loss of consciousness consisted, and I can only repeat that this man did not lose consciousness in the same sense as a man suffering from cerebral concussion. Without doubt he had passed through a violent mental disturbance; later I shall endeavour to analyse this mental disturbance, but there was no loss of consciousness. A— is above all suffering from emotion, he is not suffering from cerebral concussion. The disturbances exhibited by him must be attributed to emotion, and not to concussion.

Sequence of Phenomena following the Emotional Shock.

I do not insist on the manifestations which determined the emotional shock in this man. I only wish to draw attention to the manner in which they unfolded themselves.

In the case of A— in the space of a moment a violent emotion has disturbed his physical and mental equilibrium; nearly instantaneously he was overcome by an intense trembling; his heart beats and his respiration became extremely rapid. His mental state was changed; his face took on a lacrymose and mournful expression; it was impossible to obtain from him an answer or gesture to show that he understood what was said to him. The reaction to emotional shock was therefore immediate.

Six hours after the shock some of the phenomena still persisted—tachycardia and tachypnoea. Others had become less and been modified. The trembling had diminished but not disappeared. His appearance was still stupid, but one could get into communication with him. He answered questions slowly as if it was an effort to do so, but he answered correctly, and he gave details spontaneously. Thus after six hours, and although he was under cover, the disturbance produced in my patient's organism by the emotional shock had not yet calmed down. Certain of the physical phenomena by which emotion shows itself persisted unchanged; others were present but in less degree. The mental state appeared to approach the normal.

But this improvement of mental state was but a truce. Indeed, on the third and fourth days after the shock the state of A— was as follows: tachycardia and tachypnoea persisted; trembling had become less and was localised to the right hand. But the mental state was more disturbed than it was six hours after the shock. A condition of stupor and pronounced mental confusion existed, which amounted to refusal of food and retention of urine. Thus, in the case of A— the primary period of psychic inhibition had been followed by a period in which a certain psychic activity was apparent; then this period of relative improvement gave place to a period of mental confusion with stupor.

At the end of about a week all the phenomena had begun to get less, and 14 days after the onset A— had recovered.

In A—'s case, then, emotional shock produced an immediate perturbation of the organism, the effects of which were felt for two weeks in the form of tachycardia, trembling, mental troubles in different keys and aspects, hence lasting long after the cause which had produced the shock was removed. So in certain cases the disorders following emotion on the battlefield which have been observed behind the lines or at the *dépôts* are only the primary or secondary phenomena by which emotional shock manifests itself, and which last after the cause which has disturbed the organism no longer exists.

² Some cases of cerebral concussion without loss of consciousness have been published (Guillain), but they are the exception. As a rule the concussed man loses consciousness under the shock which has struck him down.

³ This man also showed the presence of auricular concussion. Blood was running from his left ear, and with this ear he could only hear sounds with difficulty. Volatic vertigo (right unilateral inclination) was affected. When he arrived his pulse was 110 and his respiration 28. He was not trembling. An hour and a half later the pulse was 68 and respirations 20. This man spoke to me quietly, but at times he could not find certain words, so said one word instead of another. This slight aphasia decided me to do a lumbar puncture. This proved easy, and the cerebro-spinal fluid was found to contain a little blood. There appeared to be no head wound. Shortly after the examination my attention was drawn to the patient's helmet. The left half of the helmet was indented over a circular area about 2 cm. across. A projectile had struck it here. When the helmet was replaced on the man's head the depression was found to correspond with a small region which, on parting the hair, showed bruising and was painful on pressure. This area was adjacent to the point which surgeons regard as corresponding to the inferior extremity of the fissure of Rolando. In short, the cranium via the helmet had transmitted to Broca's area a shock which at once explained like the slight aphasia and the meningeal hemorrhage. This man was evacuated and recovered without sequel of his cerebral concussion. He had a left otitis media, and had to undergo a mastoid operation.

THE LANCET.

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The Neuroses of the War.

THE war, now happily, and finally we trust, come to a victorious end, will not be characterised in the histories of the future by any such limiting territorial epithets as have been assigned to all previous wars. Unique in its designation as the Great War, or even simply *The War*, it has also been unique, militarily speaking, in its air and sea, under-sea, land and even under-land aspects. From the point of view of medical science, further, it has certainly provided the stimulus for more sustained, more concentrated, more widespread and more fertile medical research than any previous event in the world's history. At its close we may now perhaps take the opportunity of passing in review the stages in the development of our knowledge of the neuroses of war, a subject which has been productive of clinical investigation to a quite unusual degree. Before the war the categories covered by the clinically descriptive terms of neurasthenia, psychasthenia, and hysteria were well recognised and more or less well differentiated and accepted, in this country at least. Into this time-honoured scheme came with upsetting suddenness and momentum the new conception of "shell shock" as a clinical entity; old terms were given up, and "shell shock" represented the latest and all-embracing idea in the neuroses or psychoneuroses. Men came home with "shell shock" on their labels, and soon both the medical and the lay mind were permeated with it; it was the cause of every functional disturbance, mental or nervous, and special hospitals were rapidly organised for the reception of the "shell-shocked." Ere long, however, calmer consideration and more painstaking research showed that under the term was included a multiplicity of clinical conditions, most, if not all, of which seemed familiar enough. Somehow there was at first a disinclination to think of the soldier—the "old contemptible," the volunteer, the patriot—as a possible subject of ordinary traumatic hysteria; but that war hysterics, and malingers, too, were appearing at base hospitals and in military hospitals at home could not be gainsaid. Gradually it came to be felt that "shell shock" was confusing by reason of its indefiniteness, and traumatic hysteria, traumatic neurasthenia, psychasthenia, and the rest seemed to come into their own again. If we mistake not, there is now appearing a tendency to group the war neuroses after the Freudian fashion, and to force them into the pigeon-holes labelled "conversion hysteria," "anxiety hysteria," and "anxiety neurosis."

But poor indeed would be the advance in our knowledge of the neuroses as the result of war experience were "shell shock" as a psychogenic or neurogenic factor to be minimised, or a sexual element in their genesis to be necessarily implied, by the adoption of a Freudian nomenclature. In our English fashion we have essayed a compromise between the old and the new, and many have come to regard the war neuroses as essentially identical with those of civil life, except in so far as the events of the battlefield are novel excitant factors and the instinct of self-preservation more potent than the instinct for the propagation of the species. The French, perhaps less apt than we to be influenced by precedent, less conservative, less bound by preconceived ideas, have divided the neuroses of war origin into "commotionné" and "émotionné" syndromes.¹ With that facility for new word-formations to which their language lends itself, they speak of the "commotionné," the "émotionné" and the "contusionné"; we have in the translation of our French Supplement followed tradition in rendering "commotionné" as "concussed," but have done so with regret. The *contusionné*, the patient with signs of local or general cerebral irritation and probably a somewhat blood-stained cerebro-spinal fluid, is, of course, clearly enough defined. The *commotionné* is the man who, after loss of consciousness from a shell explosion in his immediate vicinity, remains in a state of subcoma or obnubilation, with a variable degree of physical and mental inertia and of cerebral inhibition; his pupils are usually dilated, his pulse slow, and his reflexes diminished. The *émotionné*, on the other hand, does not as a rule lose consciousness in the strict sense (as Dr. C. VINCENT shows in his interesting paper published in our French Supplement); he has a quick pulse, moderate reflexes, and a pale, haggard or frightened visage; he trembles, and sweats; concentrated on his own *angoisse*, he is indifferent and inattentive to what goes on around except as it bears on his own safety and security. Such descriptions refer to the patients' states on their arrival at a C.C.S.; in the base hospitals the clinical appearances have changed to some extent. The *émotionné* has become a case of "emotion-neurosis"—like the anxiety-neurosis more or less; he is a pantophobe, with familiar psychical and physical symptoms. Or he may develop into an "emotion-neurasthenic" with physical and psychical overstrain, asthenia, and fatigability as the most prominent features. Or again, he may, ere he reaches the base, for that matter, have developed one or more of the pleomorphic manifestations of hysteria. Emotion-hysteria is common enough, but it should be clearly understood that hysterical phenomena do not form a constant and integral part of the emotion-syndrome, and may arise independently of emotional stimuli. It is comparatively rarely that the *commotionné* shows subsequent signs of hysteria; he remains, as a rule, an "inhibé," it may be, for months.

A schematisation of this sort may be perhaps rather cut-and-dry, and naturally cases presenting

¹ See in particular A. Léri, *Commotions et Emotions de Guerre* (Paris, Masson et Cie, 1918).

combinations of symptoms are met with; but it has much to commend it, and for practical purposes has proved, and is proving, useful and illuminating. And yet it leaves many problems unexplained, or at least only superficially elucidated—how much so can be gathered by a perusal of Dr. C. S. MYERS's interesting contribution in another column. Dr. MYERS indicates for us certain topics on which further investigation is desirable, and states that the mechanism of production of "functional dissociation" is still imperfectly understood. Emotion, suggestion, conflict (in a non-physical sense), maladaptation to environment, and so on, are factors whose evaluation remains to be determined. At this psychical end of the war neuroses there is, then, not a little for further research, in spite of the fact that in this country, as Dr. MYERS remarks and as we have always maintained, the mental aspect of the war neuroses has been elaborated at the expense of neglect of an equally detailed study of the accompanying somatic symptoms. Many have noted involvement of sympathetic, glandular, and reflex systems in emotion-neurosis and in emotion-neurasthenia, but only the fringe of the subject has been touched. Dr. MYERS pertinently asks whether functional dissociation may extend to these systems, and to what degree or "level." Similarly, in hysteria resulting from the war we should like to see more detailed investigation of the somatic and visceral accompaniments; so far from regarding such investigation as reactionary in view of the psychical nature of the affection, we feel that by it we should gain further insight into the extent of hysterical dissociation in somatic systems and learn useful criteria for diagnosis. It is not enough, in our view, to explore the recesses of the conceptual world by psycho-analysis or autognosis when the objective neural disturbances of the patient are analogous to what is found in certain endocrine affections or in certain organic conditions of the neuraxis. Dr. MYERS, albeit in an admittedly sketchy fashion, gives us enough clinical data for a realisation of the significance of investigation along such lines, and his contentions carry the more weight as coming from a professed psychologist. The varying orientation of our ideas on war neuroses during four years, apart from its intrinsic interest in the history of medicine, is of extrinsic importance for future diagnosis and treatment. Numerous, indeed, are the "unwounded wounded" at home or still abroad, and for a long time yet we shall have to deal with them therapeutically. To place them in their appropriate medical category is a matter of justice and equity; to separate the malingerer from the hysteric, the *commotionné* from the *émotionné*, the exaggerator from the *inhibé*, is a labour calling for knowledge and acumen. Treatment itself, as Dr. MYERS shows, has not been made a subject of systematic inquiry; successful workers, it is true, have published results in profusion, but there has been too little following up of cases for re-examination after an adequate interval. The war is over, but the physician's task is far from an end.

Lessons of the Influenza Epidemic.

• Epidemiology and Clinical Aspects.

FROM our review of the etiology and pathology of influenza in last week's leading article the complexity of the problems involved is apparent, and it is obvious that further investigation is necessary for their solution. This is especially true of the epidemiological aspects of the disease which have not figured prominently in the various papers which we have published; nor is this surprising, since the materials necessary for the foundation of a considered judgment have yet to be assembled.

Epidemiology.

In the highly valuable discussion at the Royal Society of Medicine on Nov. 23rd last Dr. MAJOR GREENWOOD provided data from the records of the Ministry of Munitions and the Royal Air Force which suggested that the incidence curve of the summer outbreak was closely similar to that of the first pandemic in 1889-90 and that the secondary wave partook of the characters observable in 1891-92. These data were, however, incomplete. For instance, an epidemiological explanation of the relatively greater mortality at younger ages in the present outbreak remains to be found. The official mortality figures of the Registrar-General's 96 great towns display the asymmetrical character of the autumn epidemic very clearly. The maximum number of deaths—7557—occurred in the week ending Nov. 9th, having risen to this height from 1887 in the week ending Oct. 19th. The decline again to this level has been more gradual, almost the same number of deaths, 1885, being recorded in the week ending Dec. 14th. An examination of individual towns suggests that the maxima occurred earlier in the seaports, but it is impossible yet to correlate either the severities or the rates of temporal extension in the outbreaks with geographical and economic factors. A perusal of the clinical and bacteriological papers in our own columns alone suggests the desirability of investigators not delimiting the field of inquiry too narrowly. Dr. HAROLD WHITTINGHAM and Dr. CARRIE SIMS, for instance, in our issue of Dec. 28th, 1918, drew attention to the clinical differences of the summer and autumn outbreaks, and inferred that the causal organisms must have differed. The observation is, of course, a very familiar one in the history of epidemic diseases, and has been made with especial frequency relatively to scarlet fever; it would appear to be consonant with our experience of scarlet fever to infer that the variation is not so much of the causal organism as of secondary invaders responsible for sequelæ of the primary disease. Dr. WHITTINGHAM and Dr. SIMS also refer to the "distinct tendency when an epidemic disease is raging to assign all maladies to the one common origin," and we suspect that they deprecate this tendency; yet it may be the more or less conscious expression of an important epidemiological truth. The clinical convergence of disparate types of disease in a given year or cycle of years and the clinical divergences of the same disease at different epochs are the foundations of that doctrine of epidemic constitutions which held so prominent a place in the teaching of our first epidemiologist, SYDENHAM, and depended upon wide experience and accurate observation. The total discredit into which the old theory has fallen is, of course, due to the fact that the biological prophylaxis of clinically

convergent types, such, for instance, as typhoid and paratyphoid infections, is distinct. But a heterogeneity from this point of view does not invalidate the claim that from another point of view such a group of diseases is homogeneous; just as a sample of men may be heterogeneous in political opinions but homogeneous as regards their incomes or occupations. The point we are making is of much importance, and unless it be kept clearly in mind epidemiology becomes logomachy. We have to inquire in the first place whether in the late epidemics any general morbid process has developed, and, if so, whether it can be identified with any recorded before and whether its course has been significantly different from that of any previous epidemic.

"There are in truth varied constitutions of the years, not dependent upon heat or cold, dryness or moisture, but rather upon some hidden and inexplicable change in the very bowels of the earth, whence the air is contaminated by such effluvia which predispose and determine towards this or that disease the bodies of mankind, so long as the dominion of the particular constitution endures, which constitution, its term having run, yields and gives place to another. Each of these general constitutions is characterised by a special fever peculiar to itself and not otherwise seen; such fevers we term stationary fevers."

Unlike SYDENHAM, we should regard the hidden change as being within the field of possible epidemiological research and not rest content with a vague metaphor, but the idea at the back of the passage cited appears to us still fruitful, and attention should not be diverted from it by too sedulous pursuit of bacteriological details, important as these latter are from other points of view.

Clinical Aspects.

In its clinical aspects epidemic influenza has been characterised in past outbreaks by very varied manifestations, and attempts have been made to separate out different types of the disease with indifferent success. The epidemic at present so widely distributed is no exception to this rule; indeed, so protean have been its manifestations and so unequal its virulence, that some doubts have been expressed, chiefly in the lay press, as to the disease being influenzal in origin. Various fantastic theories have obtained a wide currency with little or no basis of support. One fact that seems to emerge clearly, through intensive study of the epidemic from the clinical and pathological points of view, is that the epidemic is influenza complicated by certain secondary organisms or infections. The complexity in the causation, which is suggested by bacteriological observations, may be, and probably is, an important factor in the variability of the clinical manifestations of the disease; with further correlation of the bacteriological and clinical observations the diversity of clinical types may find accurate explanation, and different forms of the disease may be associated with different secondary infections. The clinical features of influenza become somewhat more easy of explanation in the light of the pathological conditions observed in fatal cases, and these are admirably described in the paper by Dr. ADOLPHE ABRAHAM, Dr. NORMAN HALLOWS, and Dr. HERBERT FRENCH, which we published on p. 1 of last week's issue of THE LANCET. They point out that even in the so-called pneumonic cases the lung lesions are only a part of the morbid changes usually found. They regard the fatal forms of the disease as a septicæmia of influenzopneumococcal or influenzostreptococcal origin with more or less marked local

changes in the lungs. The lung conditions found post mortem are even more varied than the clinical features of the disease, and comprise bronchitis, bronchiolitis, broncho-pneumonia, hæmorrhage, infarct, collapse, œdema, multiple abscesses, gangrene, interstitial emphysema; indeed, practically all possible morbid lesions except that lobar pneumonic consolidation is exceptional—a somewhat surprising fact in view of the physical signs, which frequently appear typical of this condition. The pleural manifestations are also variable, and range from localised dry pleurisy to large effusions of thin sero-purulent fluid. Without attempting enumeration of the lesions found, it is important to emphasise the frequency of renal changes, amounting to actual nephritis in a very considerable percentage of the fatal cases—a fact liable to escape observation clinically unless a routine examination of the urine is carried out, for œdema is absent. This is of especial importance in cases where convalescence is delayed. The pathological changes found allow little room for doubt that the fatal cases are of toxæmic or septicæmic character, and the discovery of organisms in the blood during life and in the internal organs immediately after death affords confirmation of this view.

A critical account of the symptoms of the disease will be found in the paper by Dr. FRENCH and his collaborators; but it may be worth while to point out that the character of the symptoms seems to differ in different parts of the country, and even in cases in the same place at different times. For example, some cases with pulmonary complications have been associated with an almost incessant cough, others with copious expectoration, while in some other cases with marked pulmonary involvement very little expectoration has occurred. Laryngeal, pulmonary, and lethargic varieties have been described. The types of case observed in the last few months have varied from mild febrile attacks associated with malaise, general pains in the back, limbs, and head, feelings of great prostration, thickly coated tongue, and almost complete loss of appetite, to fulminating cases fatal within 24 or 48 hours. A special feature, even of mild cases, in some parts of the country has been epistaxis, often frequent and copious. Other hæmorrhagic phenomena have been present in the septicæmic or pneumonic cases, including hæmoptysis and hæmatemesis. On the other hand, purpura seems to have been uncommon, although such might have been expected in the septicæmic cases. The colour of the patients with severe pulmonary complications is one of the features which has attracted almost universal attention, a peculiar dusky pallor, described as heliotrope cyanosis, being of most sinister prognosis, even though it may be present with only moderate pyrexia, a deceptively good pulse-rate, and not very extensive physical signs. The point is emphasised by the three observers just mentioned, who call attention also to the absence of orthopnoea and the comparatively slight degree of cardiac dilatation which may be present even in cases dying rapidly with marked cyanosis. These are points which strongly support the view of the septicæmic nature of the cases as opposed to the pulmonary origin of the symptoms. The frequency with which suppuration in the sphenoidal sinuses has been found in fatal cases, as well as the occurrence of severe epistaxis even in mild cases, and the existence of pharyngeal or laryngeal inflammations in some forms of the disease all serve to suggest that the channel of

¹ Sydenham: *Observationum Medicarum*, lib. 1., cap. 2, par. 5.

infection is usually by the upper air-passages. The use of antiseptic gargles and nasal douches as a preventive appears, therefore, to be well founded, and the use of a gauze mask over the mouth and nose by nurses and medical men in attendance on cases in institutions seems a reasonable precaution. The physical signs in the pulmonary type of case are as variable as the other features of the disease. There may be general or local catarrhal signs, scattered patchy consolidation or signs strongly suggestive of lobar involvement, though they are in reality due to aggregations of broncho-pneumonic areas. Neither diagnosis nor prognosis can be gauged by physical signs too closely. In other cases signs of fluid may develop rapidly, but diagnosis of the lung or pleural conditions is often rendered difficult by variations in the physical signs from day to day. An interesting condition which has been observed in a few cases is subcutaneous emphysema—sometimes localised, occasionally widespread.

Treatment.

In regard to treatment no satisfactory routine measures can be said to have been discovered as yet. The various "specifics" suggested seem hardly to justify the claims made by their partisans. In all cases some such scheme of expectant and symptomatic treatment as that outlined by Sir THOMAS HORDER in THE LANCET of Nov. 23rd last should be adopted, and this with efficient nursing may be all that is required; but in the severe pneumonic, toxæmic, or septicæmic cases the therapeutic resources of the practitioner may be taxed to the utmost and yet fail, for some of the cases, notably those with the peculiar "heliotrope" cyanosis, seem all but hopeless. The question of treatment by vaccines and serums is still an open one. Evidence seems to be accumulating as to the value of prophylactic inoculation with mixed vaccines of the Pfeiffer bacillus, the pneumococcus and the streptococcus. We may hope that statistics on this question will be forthcoming eventually, and that the value of the procedure will be authoritatively appraised. Anti-streptococcus serum has been used by many observers in the toxic cases, but the results recorded seem to offer but moderate encouragement, though its use is rational in cases in which the presence of the streptococcus has been established. The use of vaccines in the treatment of the disease itself has been deprecated on the supposition that the induction of a negative phase might affect the course of the disease unfavourably. In a paper published in THE LANCET of Dec. 28th by Dr. W. H. WYNN this objection is denounced as theoretical, and the value of vaccines in acute influenza is strongly affirmed. This question, like many others, must be regarded as still *sub judice*, but we may hope that when the experience afforded by this epidemic has been collated some practical knowledge may result which, while not preventing further epidemics, at least will render them less serious in their effects.

Rabies and its Treatment in this Country.

OUR insular position and the spirited action of the Board of Agriculture under Mr. WALTER LONG resulted in the complete immunity of Britain from rabies for more than a decade. The faint academic interest felt for an infection occurring only on the continent has been violently stimulated by the recent outbreak of rabies in Devon and Cornwall.

The airship and the dislocation caused by war conditions have made the rabies blockade ineffective, at all events for the moment, although no one will have any sympathy for the blockade-runner whose thoughtless selfishness may result in such terrible consequences to his countrymen. Hitherto anti-rabic treatment has not been available nearer than Paris, but Dr. EMIL ROUX, before relinquishing the office of director of the Pasteur Institute in Paris, with which he has been so long and honourably associated, rendered a very valuable service to this country by enabling anti-rabic treatment to be given with material sent over at frequent intervals from the institute to the Local Government Board. It is practicable, in the experience of the institute, to rely upon glycerine and cold to preserve the virus in a proper degree of potency for several weeks, and by these means to supply for use in this country spinal cords representing fixed virus of different ages, from which emulsions can be prepared and treatment can be given on lines parallel to those used at the parent institute. The Local Government Board have now announced to the local authorities of Devon and Cornwall that in place of the elaborate arrangements which had recently been made to facilitate the journey to Paris of persons known to have been bitten by rabid animals, anti-rabic treatment can in future be given at Plymouth, where the arrangements have been placed under the charge of Dr. W. L. PETHYBRIDGE, pathologist of the South Devon and East Cornwall Hospital. District councils are authorised in this connexion to pay reasonable sums for the maintenance in Plymouth of persons requiring treatment who cannot stay there at their own expense for the two or three weeks necessary for the completion of the course.

This provision of anti-rabic treatment is obviously necessary while cases of rabies in dogs and other animals continue to occur in these two counties. The disease has not disappeared, though there is reason to believe that the various restrictions on the movements and keeping of dogs, and the compulsory muzzling requirements of the Board of Agriculture, have already greatly reduced the opportunities of its spread, and apparently no cases are occurring outside the two counties named. It is understood that about 30 persons have actually been bitten by dogs definitely ascertained to be rabid since the outbreak was discovered. Nearly all of them have received anti-rabic treatment at Paris or at Plymouth, and it is satisfactory that no human case of hydrophobia has so far occurred. In their last Memorandum to the local health authorities, dated Dec. 31st, 1918, the Local Government Board state that the Board of Agriculture take steps to secure that the names of all persons known to their officers or to the police to have been bitten by dogs known or suspected to be rabid are at once communicated to the medical officer of health of the district. That officer communicates direct with the medical department of the Local Government Board, through which he learns of the facts regarding the dogs which have been ascertained at the laboratories of the veterinary officers of the Board of Agriculture, and obtains any further information available to guide him in deciding whether anti-rabic treatment should be advised. Where this advice is necessary the arrangements for treatment are to be made by the medical officer of health by direct communication with the pathologist at Plymouth, in order that the course of treatment may be started as speedily as possible.

Annotations.

"Ne quid nimis."

THE ETIOLOGY OF LINGUAL CANCER.

IN his Bradshaw lecture on Cancer of the Tongue Mr. D'Arcy Power referred to the fact that it is almost entirely a human disease; it is always of one type; it is unknown in children; it is common in men, rare in women, and is not associated with any inherited predisposition to carcinoma. He gave an interesting description of the disease from the historical standpoint, pointing out that it did not become important surgically until the seventeenth century, the Greek, Latin, and Arabian writers on surgery hardly mentioning it, and so far as can be ascertained at present it is unknown to the Anglo-Saxons.

"The first definite notice of cancer of the tongue is the case of Ralph Freeman who died on March 16th, 1634, whilst serving the office of Lord Mayor of London. He suffered from secondary hæmorrhage and it was the opinion of the physicians and surgeons who were in attendance upon him that a mercurial course might have been of use at an earlier period of the disease. The second recorded case occurred in Germany, and was looked upon as a miraculous punishment for cursing the clergy. The story runs that 'lately a certain baron spoke abusively to all and sundry, but kept his most venomous shafts for the clergy and for those who devoted themselves to God's service. One day a holy brother of good repute whom he had just lashed said, "Your foul tongue has overlong deserved that punishment from an offended God which it will shortly receive." The baron rode off undismayed, but a few days later a small swelling began to grow at the side of his tongue. Little by little it increased in size until it became an inoperable cancer, and the baron, penitent and confessed, died miserably afflicted.' From the middle of the seventeenth century onwards cancer of the tongue became so frequent that it was no longer necessary to invoke a miracle for its production. At the present time cancer of the tongue is known to have occurred in one horse, three cats, and one dog. All these animals were aged, and in each the cancer was of the squamous-celled variety. It appears fair to assume, therefore, that lingual carcinoma has always occurred in men and domesticated animals; that originally in man it was no more frequent than it is now in animals; but that from the seventeenth century onwards it has increased out of all proportion in man, whilst the incidence has remained stationary in animals."

The returns of the Registrar-General were quoted in order to show the rate at which cancer of the tongue has increased in man. Dr. T. H. C. Stevenson, Superintendent of Statistics at Somerset House, writing in 1909, said that "the recorded mortality has increased amongst males by no less than 228 per cent. in 41 years. The increase, moreover, is entirely confined to the male sex." Mr. D'Arcy Power then considered the possible factors causing this increase, among which irritation had long been looked upon as important, and it has been suggested that pyorrhœa and dental caries have become more common. He thought that the virulence, but not the amount, of pyorrhœa seemed to have increased lately, whilst caries did not appear to be more frequent now than it was in some parts of England during the prehistoric period. Roman skulls found in England, he said, had nearly as many carious teeth as there are in the skulls of Londoners who died within the last 200 years. And if cancer of the tongue were the direct result of carious teeth the disease should have been as well known to the surgeons at Rome as it now is to us. But neither in Celsus nor in the Latin satirical poets is there any allusion to it. With regard to the question of syphilis being a predisposing cause, the lecturer gave, in discussing this point, an account of 169 persons who were

admitted to St. Bartholomew's Hospital with cancer of the tongue during the years 1909-1916.

Nine of the patients were women, the rest were men, or a proportion of 18 to 1; the true proportion, as shown by the returns of the Registrar-General, being 1 woman to 8 men. Of the women seven were married, one was unmarried, and the social state of the other is not mentioned. Of the seven married women, one gave a history of syphilis, two showed signs of syphilis, and one was a widow who had only one child alive out of five; the note adds, "She looks as if she drank." One woman had leucoplakia of the tongue at the age of 17, and stated that her father had suffered from an "abscess of the brain" which was cured by medicine. This was probably a gummatous meningitis. There was no history of syphilis, either acquired or inherited, in the other two married women. The unmarried woman—a nurse—said that her father died of aneurysm, and that she herself had suffered from an abducent paralysis which came on suddenly and was cured by medicine. None of the women smoked, but all had bad teeth.

In the case of the men 93 out of the 160 were syphilitic. 62 gave a history of syphilis, and the remaining 31 showed signs of the disease, the syphilis being invariably of long standing. Twenty-six patients stated definitely that they had never had syphilis, but one of these had suffered from gonorrhœa, and the blood of two gave a positive Wassermann reaction. Many of the patients had drunk to excess, but did not, as a rule, acknowledge that they had taken spirits freely.

A Wassermann test had only been performed 26 times; it was negative in 12 and positive in 6 cases; in 5 it was doubtfully negative and in 3 doubtfully positive. These results were compared with those obtained by Captain Arnold Renshaw, R.A.M.C., of the Manchester University Medical School, and Captain Archibald Leitch, R.A.M.C. (T.), of the Cancer Hospital, Brompton, and it was thought that the evidence brought forward pointed to a close association between syphilis and cancer of the tongue. The syphilis might be active, but it was more often quiescent or even extinct, the conclusion arrived at being that, as in some cases of tuberculosis, "syphilis made the bed upon which cancer is born." It appeared, further, that an increase in the number of deaths from lingual carcinoma had occurred after periods when mercury had temporarily fallen into disuse in the treatment of syphilis. Such insufficient treatment was the rule in the later years of Queen's Elizabeth's reign, when guaiacum, sarsaparilla, and the "vegetable" cures displaced the original mercurial methods; as also during the Regency period, when some of the Army medical officers nearly succeeded in abolishing the use of mercury; and, again, in the early Victorian era, when the value of potassium iodide was unduly exploited. Many of the patients whose cases were recorded at St. Bartholomew's Hospital stated voluntarily that they had only been treated with mercury for a fortnight or three weeks, after which they considered themselves cured.

Syphilis, Mr. Power concluded, could not be considered as more than a predisposing cause of cancer of the tongue, because lingual carcinoma occurred in animals. An exciting cause, therefore, must be looked for, and that cause ought to have become more prevalent during the last 50 years if the increase in cancer of the tongue was to be attributed to it. The cause must also be one which acts in men more than in women. He thought that the increased consumption of tobacco seemed to fulfil these conditions. Cancer of the tongue, he said, did not become frequent until some years after the introduction of smoking in the last quarter of the sixteenth century. The habit spread slowly during the seventeenth, eighteenth, and nineteenth centuries. Cigarettes were introduced about 1877, and from that time onwards the smoking of tobacco has steadily increased until it is now an almost universal habit with both sexes from adolescence onwards. Smoking acts in two ways as an irritant to the tongue, partly through the nicotine and partly by the increased heat in the mouth, which is measurable by the thermometer. In the latter respect it may bear the same relation to cancer that heat does in kangri cancer, where the thermal irritation appears to be a definite factor in the production of epithelioma. Although the predisposing and the exciting causes of cancer may be

known, the actual cause has yet to be discovered, but if two factors are recognised it ought not to be impossible to discover the third. It is theoretically possible to reduce cancer of the tongue to the subordinate position it occupied before the seventeenth century and which it still holds in the domestic animal, and this could be effected by a thorough treatment of syphilis in its initial stages. Persons who were being treated for syphilis should be told never to smoke, not to drink to excess, and to pay regular visits to the dentist. Such advice should be given whilst the patient is still under treatment, and should not be deferred until the tongue has become sore. Failure to follow this advice and a continuance of the treatment of syphilis on ineffective lines will be followed in all probability by a very large increase in the number of patients with cancer of the tongue. This increase should begin about 1950, and should affect women as well as men, for syphilis is now more widely spread amongst the younger generation than it has been for many years past, and both sexes smoke much larger quantities of tobacco than ever before.

MOTOR MECHANICS FOR CRIPPLES.

MOTOR mechanics is proving in the Dominions, as here, a popular subject of instruction for crippled soldiers on their way to become self-supporting workers. Mr. Douglas C. McMurtrie, director of the Red Cross Institute for Crippled and Disabled Men in New York City, writes that the trade is almost too popular in the Canadian schools. Practically every Canadian soldier, when asked to choose from among the various trades in which classes are held, selects automobile mechanics. Most of the men now have to be dissuaded from their intention or the supply of mechanics would soon far exceed the demand. Canada, England, Germany, and India amongst the belligerents are offering training courses in motor mechanics to disabled men of their own forces, and America is falling into line. At the large reconstruction hospital at Fort McHenry, for instance, automobile mechanism is taught, and one-armed or one-legged mechanics will be no new thing once the general public has accepted the principles of re-education. In British Columbia gasoline engine classes were organised soon after the wounded began returning from overseas. Vancouver, Victoria, Esquimalt and Westhaven provide instruction in motor mechanics. In Victoria the Military Hospitals Commission and the Board of Education together operate a fully-equipped motor repair-shop in which men who wish to become chauffeurs are taught. Men trained in this course conduct a well-patronised taxi-stand in the town. Those who wish a thorough course in motor mechanism are sent to Vancouver, and later to the new workshops at Esquimalt and Westhaven. The Commission has arranged for war cripples at Vancouver to be taught driving in the evening classes of an excellent automobile school. At this school any disabled soldier may attend the day classes free of charge. Men from other parts of British Columbia are kept in Vancouver on a maintenance allowance while receiving training. Courses are also given at the University of Saskatchewan, and at the Provincial Institute of Technology and Art in Calgary. In this country, as is well known, the workshop at Roehampton is fitted up as a model garage in charge of disabled men who, besides being skilled instructors, understand the special problems of the

war cripple. At Dusseldorf the course in automobile mechanics was established at the request of the motor repair-shop owners, who needed workmen and could not obtain able-bodied men. Within a very few months of its inception the pupils had successfully repaired 14 different types of motors. In India Queen Mary's Technical School in Bombay gives opportunity for the study of automobile mechanics by the crippled natives, whose imagination has been roused by this method of equalising their physical handicap.

THE NOTIFICATION OF ENCEPHALITIS AND POLIOMYELITIS.

To those who have made a study of epidemic disease the decision of the Local Government Board to make acute encephalitis lethargica notifiable is a source of very real pleasure. It is all to the good that the hands of the public health authorities should be strengthened in respect of this disease, and there is much significance in the fact that although it has been discovered so recently it is already included in the list of diseases dealt with under the Public Health Acts. The advantages of notification as the fundamental step in the elucidation of the problems of infectious disease in general appear now to have been fully recognised, and the arduous labour which attended the struggle to get acute poliomyelitis on the list is bearing fruit in another direction. Judging by past experience there is the possibility of a recurrence of encephalitis lethargica in the spring, and the medical profession will not be caught unprepared for the visitation. The general characters of the disease, at any rate in its more striking forms, have been brought prominently before the profession in our columns and elsewhere. With information of the occurrence of cases at their disposal the authorities will be able to coördinate research, and the discovery of the cause of the disease, which is the first step towards rational treatment, will be advanced.

SPANISH-AMERICAN MEDICAL FELLOWSHIP.

THE spirit of friendly coöperation has invaded medical circles on both sides of the Atlantic, and one of its latest developments is the proposed issue of a Spanish edition of the very ably edited *Journal of the American Medical Association*. The purpose of the issue is to promote the study of scientific medicine, and in so doing to further a closer international relationship between the great federation of English-speaking states in the North and the looser union of Spanish-speaking republics in the South. Last March President George E. Vincent, of the Rockefeller Foundation, approached the editor of the *Journal of the American Medical Association* with a suggestion on the subject, and at a subsequent meeting of the board of trustees of the journal the publication of a Spanish edition was authorised. The first number is arranged to appear early in the present month, and the issue will be continued, for the time being, twice a month. All that is of more general interest and permanent value in the weekly Chicago edition will appear in the Spanish issue. Some 2000 medical practitioners in Central and South America have been asked for their opinion as to the reception such a journal would meet with, and all the replies as yet received have been favourable. Up to the present Mexico and South America have been wont to turn to France and Germany for undergraduate and post-

graduate teaching, and to take from them their inspiration towards progress. This new venture may lead the scientific men generally of the American Continent to realise their identity of interest and to open up opportunities for interchange of knowledge and of the results of research in various fields. We do not construe it in the sense of a rigid application of the Monroe doctrine. Certain standard English text-books of medicine have already been translated into Spanish, and we should like to see this peaceful form of penetration continue and develop.

PARALYSIS AGITANS AND THE CORPUS STRIATUM.

It appears that we are within a measurable distance of an understanding of the pathology of this chronic nervous syndrome. In an interesting paper by Dr. J. Ramsay Hunt in the *Archives of Internal Medicine* (November, 1918) this writer records in full detail the morbid findings in two cases of paralysis agitans; in both the sole lesion was found to be a primary atrophy of the pallidal system of the corpus striatum. The corpus striatum in man is divided by the passage of the internal capsule into two structures, the caudate nucleus and the lenticular nucleus. The latter is subdivided into an external segment, the putamen, and an internal, the globus pallidus. The globus pallidus is older phylogenetically than the caudate nucleus and putamen (neostriatum). It is also distinguished from these structures histologically. The neostriatum contains two types of cells, a small type of ganglion cell of pyramidal form, and a large type of ganglion cell, the homologues in the corpus striatum of the Betz cells in the motor cortex; the globus pallidus contains only these latter large cell types. By the course of the fibres related to these two cell systems their functional significance can be inferred. The small-cell fibres end in the globus pallidus; they constitute a short association and inhibitory system for the corpus striatum, and atrophy of this system is the essential cause of Huntington's chorea (Hunt). The large-cell fibres, on the other hand, have a wider distribution; they extend to the optic thalamus, constituting the efferent pallidal system, and exert, through the red nucleus and substantia nigra, a regulating influence upon the extra-pyramidal motor system of the spinal cord. Lesion of this pallidal system results in paralysis agitans. The corpus striatum and the strio-spinal system are to be regarded as constituting a mechanism for the control and regulation of automatic and associated movements, paralysis of which results in the syndrome of paralysis agitans; in this sense it is to be distinguished from the other type of central palsy characterised by spastic paralysis, a paralysis here of isolated and discriminatory movements, and referable to damage of the pyramidal system.

The two cases recorded confirm these views as to the pathology of paralysis agitans. In the first, that of a man aged 56, who died of an intercurrent infection, there were found atrophic changes in the large motor cells of the neostriatum, with slight reduction of the medullary network of the globus pallidus and thinning of the strio-hypothalamic radiation. The second case showed atrophic changes in the large motor cells of the corpus striatum and other changes in the globus pallidus similar to those met with in the first case. There were no other evidences of central nervous involvement in either case. Dr. Hunt discusses the causation of the symptomatology. The rigidity and tremor

are referred to a loss of striatal inhibition, the corpus striatum controlling muscle tonus as does the cerebral cortex. When this inhibitory function is abolished hypertonicity results. The striated muscle has a double innervation—the anisotropic disc system controlled by the motor nerves, and the sarcoplasmic substance controlled by the sympathetic system. The former subserves the function of quick contraction; the latter, plastic function concerned in posture. It is suggested that there exist two distinct centres for the control of muscle tonus—one for contractile tonus, which regulates the anisotropic disc system, the other for the plastic tonus. Both centres are under the control of the pallidal system, and loss of this control may be indicated by tremor or rigidity according to the system involved.

THE FUTURE OF THE V.A.D.

Now that hostilities have ended and the women of the Voluntary Aid Detachments are being demobilised, the question arises as to how we can assist them in qualifying for some useful career. Many of them are women of the educated classes who have given up the work which they had already entered upon in order to help the country in its great need: others were living a life of leisure and amusement when the call came. All have answered nobly; in the one case careers have been cut short, in the other the women have become imbued with the ideal of a life of activity and of usefulness to their fellows such as would not have dawned for them had there been no "Great War." It is with the endeavour of helping these women that Lady Amptill, chairman of the Joint Women's V.A.D. Committee, has initiated a scholarship scheme, and the Joint Committee of the British Red Cross is contributing a sum of money "as a tribute to the magnificent work so generously done by V.A.D. members during the war." Various spheres of work are suggested, for which scholarships will be given which are likely to prove attractive to different types of mind. The list, which makes no pretence to be complete, includes: medicine; nursing (military, naval, and civil); district nursing; village nursing; midwifery; school nursing (elementary schools); nursery nursing; school matrons; physical culture; instructors of mental defectives; pharmacy; X ray assistants; dentistry; domestic science; institutional cookery; sanitary inspectors; health visitors; welfare supervisors; hospital almoners; and infant welfare workers. Many V.A.D.'s have given yeoman service in domestic capacities and have proved their worth as cooks. Those who have given their time to nursing and other work of a medical character may wish to continue along the same lines. For many years the conditions and prospects of a nurse's life have not in general been such as to attract the best class of woman. The hours are long, the work is arduous and exacting, the pay is poor, and the prospects are uninviting. Anyone can be, or call herself, "a nurse," there is no definite qualifying standard, and consequently the position, when attained, is to some extent spoiled of the honour which is its due. There has never before been such a harvest of well-bred, well-educated women for the hospitals to garner if they can. But infant welfare work, domestic science, teaching, and many other attractive occupations are competing. Is it too much to suggest that the nursing profession should take this occasion to put its house

in order? The Great Northern Hospital has just given a lead by raising the scale of remuneration to ward and theatre sisters. Another London hospital is planning its nursing on three shifts instead of two. But much more remains to be done before nursing becomes a career to which we shall gladly commend our daughters, instead of a self-sacrificing adventure which they themselves choose, and one fit only for altruists.

THE DEATH-RATE OF MENTAL DEFECTIVES IN INSTITUTIONS.

IN noticing the annual report of the Royal Earlewood Institution for Mental Defectives in a recent issue (THE LANCET, 1918, ii., 656) we commented upon the excessively high death-rate recorded at the institution during the year 1917. Calculated on the average number of residents, this rate amounted to 81.5 per 1000. The medical superintendent of the institution, Dr. Charles Caldecott, informs us that the high death-rate is the product of several causes. In the first place, a large number of patients were elected many years ago to be maintained in the institution for life, and although on any average expectation of life these patients would have died off some years ago, there are, in fact, 20 to 30 of them still alive, and the death-rate is therefore each year unduly loaded by these survivals. During 1917, 16 of the recorded deaths occurred amongst such "life" cases. In the second place, asylum populations have not escaped the epidemics of the last two years. During 1916 a severe epidemic of scarlet fever occurred with about 70 cases; in 1917 an epidemic of measles with a total figure of 150 cases. These two epidemics, in Dr. Caldecott's opinion, left the convalescents more liable to general diseases, especially tuberculosis, and the latter was, in fact, the cause of about one-half the deaths. Added to this the stringent regulations respecting the lighting in force during the latter part of the war necessitated the closing of windows and ventilators or the close curtaining of windows, with resulting lack of fresh air and its invigorating qualities. The rationing of staple articles of diet doubtless had an undue effect on the conservative taste of institution patients and tended further to undermine their constitutions. Accepting this analysis as true in measure of the high death-rate of mental defectives, it will be seen that part of it is apparent, part irremediable, and part—possibly a considerable part—due to removable causes, some of which have already been removed. As with statistics in general, careful sifting is required to bring out any useful lesson.

MEDICAL INFLUENZA VICTIMS IN SOUTH AFRICA.

IN South Africa, as elsewhere, doctors and nurses have been endeavouring to stem the tide of the influenza epidemic, and many have succumbed to the disease, their death in some cases having been caused or hastened by overwork. Dr. Charles Howard Spaulding, of Johannesburg, who had been working at high pressure for several weeks, refusing to relinquish his professional duties although advised to do so, died in October at the age of 51 years. He was an M.D. of Chicago, who went out to South Africa in 1892. James Alexander Thwaites, a surgeon, who died on Oct. 11th, was the son of a Cape Government surveyor, and was born at Beaufort West in 1870. He was educated at the South African College, Cape Town, qualified at Edinburgh, and

served as senior medical officer with Kitchener's Horse for two years during the Boer war. Dr. William Mortimer died of influenza at Potchefstroom on Oct. 24th. He was born at Port Elizabeth in 1864 and was educated at St. Andrew's College, Grahamstown, and Diocesan (Bishop's) College, Rondebosch. He entered the London Hospital Medical College in 1883, securing the Conjoint Diploma in 1887. He took a deep interest in public affairs, was town councillor in Potchefstroom from 1905-06, and again from 1907-09, and was elected Member of the Legislative Assembly for Potchefstroom in 1907. Lieutenant-Colonel H. S. van Zyl, who, at the time of his death, was in command of No. 2 General Hospital, Maitland, Capetown, was, as his name implies, of Dutch descent. He was medical officer to General Botha during the Boer War of 1899-1902, and had been on active service since the Boer rebellion of 1914. Dr. A. S. Kuny died of pneumonia at the New Somerset Hospital, Capetown, where he was one of the resident medical officers, on Oct. 17th. He was the son of Dr. Kuny, of Volksrust, Transvaal, and was 26 years of age. He qualified at Edinburgh in 1915, and had served in the R.A.M.C. in Flanders for two years before returning to the Cape last August. The medical men who remain have been terribly overpressed, and some who had retired have returned for the nonce to active practice. The Hon. Sir Thomas Smartt, a Member of the Legislative Assembly since the retirement of the late Sir Starr Jameson, and Leader of the Opposition in the Union South African Parliament, who qualified in 1878, has during the epidemic been carrying out inoculations at Stellenbosch. It is not alone the human population which has suffered in South Africa; baboons and monkeys also appear to have fallen victims. Farmers in the Hekpoort district state that hundreds of baboons have been found lying dead in the kloofs and along the roadside, whilst monkeys are reported to have succumbed in the Cape Province. Witch doctors are reported to have been kept busy, with what success does not appear. Some of the Orange Free State natives are refusing medicine and pinning their faith to their ancient methods. This is natural, as medical science has not in this field shown anything very striking to compete with necromancy and sorcery.

Sir John Goodwin's tribute to the temporary officers of the Royal Army Medical Corps will be found on p. 84.

SIX Hunterian lectures will be delivered at the Royal College of Surgeons of England on Phases in the Life and Work of John Hunter, by Professor Arthur Keith, Conservator of the Museum, at 5 P.M. on Mondays, Wednesdays, and Fridays, commencing Jan. 20th. The dates will be announced in our Medical Diary from week to week.

IN a further list of New Year Honours, announced as we go to press, are the names of three medical men upon whom a well-deserved Knighthood of the British Empire has been conferred—namely, Dr. Edward Napier Burnett, chairman of the Economic Committee of the Army Medical Department; Dr. G. Archdall Reid, F.R.S.E.; and Dr. William Hale White, chairman and consultant to Queen Mary's Royal Naval Hospital at Southend. Other appointments to the Order appear under the heading "The War and After" or will be given next week.

Correspondence.

"Audi alteram partem."

"HETERÆSTHESIA."

To the Editor of THE LANCET.

SIR,—In connexion with Major D. W. Carmalt Jones's paper, "Sensory Changes in the Diagnosis of Trench Fever," which appeared in THE LANCET of Oct. 5th, we think that our own observations on a somewhat similar phenomenon may be of interest. We originally found that in a case of Brown-Séquard paralysis the phenomenon of allocheiria occurred at segmental boundaries when one electrode of the faradic battery was drawn across the skin upon the side of the body which exhibited sensory changes. In this manner we were able to map the segmental areas upon the whole of the left side of the body from the level of the second thoracic segment downwards, but were unable to find any corresponding phenomenon upon the right side of the body. This latter fact and the precautions which we took negatived the possibility of "suggestion." Having found this phenomenon accidentally, we proceeded to look for similar phenomena in other conditions. We found that when the unipolar faradic electrode is drawn over the skin (a pin may be used with less satisfactory results) in certain neurological conditions the patient responds either by a movement or by speech when cutaneous lines (which seem to be segmental or radicular) are passed across. His response indicates that the apparent sensory value of the stimulus (which varies in locus but not in strength) changes as the electrode passes across the line. The change may be in either direction—increase or decrease. The conditions in which we discovered this phenomenon are: concussion of the brain with fracture of the base of the skull; concussion of the spinal cord from the graze of a live shell; true shell concussion. In these states the phenomenon is transient—disappearing in a few days or weeks.

In many individuals it is extremely easy to obtain the phenomenon by "suggestion" even when it is thought that suitable precautions are being taken to prevent this. The drawing of a line upon the skin with a blue pencil in itself suggests to the patient where the next change should be felt, and we have found in our practice that it is advisable to mark points of change with dots, and to pass haphazard from one part of the body to another, finally joining the dots with lines for permanent record by photography. Where a line of change is being investigated it is essential to start the electrode at different distances from the expected line and to move it at an even rate over the skin. After using every precaution we are certain that the phenomenon as it occurs in such cases is a true one, and not due to "suggestion."

We would like to propose the term "heteræsthesia" for the phenomenon. As the lines of change do not, in our experience, mark a constant variation in sensibility (for at one time the line of change may be one at which the sensation is apparently intensified, while at another time, the electrode being drawn in the same direction across it, the change may be one of diminution) it has occurred to us that the phenomenon may be due to the disturbance of a higher mechanism which normally tends to adjust the excitabilities of the spinal segments, and, when disturbed, may allow those excitabilities to have greater than normal variation amongst themselves.

We have had the advantage of controlling our results in a large number of cases, many of whom have had malaria, and can say definitely that it is not necessarily present in men who have had malaria without concussion. But we have not examined cases of malaria during the fever or immediately after it. We have to a certain extent relied on this phenomenon of "heteræsthesia" in the diagnosis of shell concussion.

It would be interesting to know what Major Carmalt Jones's experience is with regard to the relation of the phenomenon to the period of fever and with regard to the duration of the phenomenon after the fever has ceased. We hope that a short paper which we wrote last year on this phenomenon as it occurs in neurological cases will shortly appear in another journal.

We are, Sir, yours faithfully,

Neurological Department, B.S.F.,
Nov. 1st, 1918.T. GRAHAM BROWN.
R. M. STEWART.

ANTIMONY IN BILHARZIOSIS.

To the Editor of THE LANCET.

SIR,—I have read Mr. J. E. R. McDonagh's note in THE LANCET of Sept. 14th. Nothing is new in medicine, and I dare say that tartar emetic (antimony tartrate) has been used many times for bilharzia, especially in days gone by before tartar emetic fell into disrepute. I have not seen Mr. McDonagh's book.

In May, 1917, after making a trial of antimony tartrate by intravenous injection for leishmaniasis (kala-azar, espundia, tropical sore, all of which are found in the Sudan), and finding it, as other workers had found before, a specific, I began to try it for the *Schistosomum hæmatobium* (Bilharz), and found it equally successful, and we have since used it as routine treatment and have still the treatment under trial at the Khartoum Civil Hospital. I hold the same opinion about it as I did at first—that it is a specific cure for bilharziosis. My work was original, and has been, independent of anyone else's work and quite spontaneous, and I had never read of, or heard of, or dreamt of any other worker having before tried antimony for bilharzia.

Although I had written my paper considerably before I despatched it to THE LANCET on June 2nd, it was published on Sept. 7th, 1918. I have now had one and a half years' experience of cases under the treatment, and think it will prove a great benefit to the people of Egypt. If they can get rid of the scourge of bilharziosis the Egyptians will become a clear-complexioned, rosy-faced race. One of the most striking features of the treatment is the change from the muddy, sallow face to a healthy, pink, clear complexion. I intend to publish more observations on the treatment shortly, but there is no hurry.

I may say that antimony tartrate for bilharziosis is under trial at the Egyptian Army Military Hospital, Khartoum, and I hope that Major Innes, R.A.M.C. (T.), who is interested in the treatment, and who is carrying it out with the caution and patience and with all the splendid critical qualities of the Scottish race which have made its scientific work so valuable, will have something favourable to put on paper soon.

I am, Sir, yours faithfully,

J. B. CHRISTOPHERSON, M.D.

Director, Khartoum and Omdurman Civil Hospitals.
Khartoum, Sudan, Nov. 20th, 1918.

EPIDEMIC ENCEPHALO-MYELITIS AND INFLUENZA.

To the Editor of THE LANCET.

SIR,—It seems worth while, at the risk of being wearisome, to draw attention to the increasing volume of testimony that points to the essential unity of epidemic encephalo-mylitis (in the epidemiological sense at least) with epidemic influenza. In this connexion the recent paper by Dr. Smith Jelliffe,¹ and the remarks of Dr. Beates,² as well as the observations of Sir Thomas Horder³ concerning the present prevalence of poliomyelitis, are of very great importance. Professor Chartier⁴ has discussed, with delicate irony, the claims of "encephalitis lethargica" to be considered an autonomous affection, and hints, not obscurely, that it is really "*une variété symptomatique d'une infection générale telle que l'influenza*." In a paper read by me a week or two ago before the Section (of the Royal Society of Medicine) for the Study of the History of Medicine, I gave many historical records of epidemics of encephalitis, encephalo-mylitis, and poliomyelitis, definitely associated with epidemics of influenza. But though Brorström, in 1910, first showed the relation between poliomyelitis and influenza it is Dr. Hamer who, above all others, has insisted on the importance of recognising the epidemiological association between these various epidemic prevalences generally.

As Lombard, of Geneva,⁵ wrote many years ago:—

La grippe est souvent précédée par une constitution éminemment nerveuse, dont les caractères principaux sont de porter la trouble dans les fonctions du cerveau et des nerfs encéphaliques.

In 1837, too, the "apoplectic" forms of encephalitis on which Dr. Farquhar Buzzard has justly laid so much stress were observed by Récamier and others, while Gintrac, of Bordeaux, described in the clearest manner "epidemic stupor" in

¹ New York Medical Journal, 1918, ii., 757, 807.² Ibid., 922.³ THE LANCET, 1918, ii., 874.⁴ La Presse Médicale, Dec. 23rd, 1918, 660, 661.⁵ Gaz. Méd., 1833, 729, and 1837, 214.

children; all this occurring, in Malcorps' words, amongst the "prodromes nerveux" of the epidemic influenza of that year.

Surely then, as Chartier says, if "encephalitis lethargica" is to take place as an autonomous affection, "il serait important de fixer nettement les limites et les caractères différentiels de cette maladie."

I am, Sir, yours faithfully,

Harley-street, W., Jan. 3rd, 1919.

F. G. CROOKSHANK.

RESIDENTIAL TREATMENT FOR PREGNANT WOMEN SUFFERING FROM VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—In an annotation on the Prevention of Syphilis among Infants in your issue of Dec. 28th last reference was made to work done by the London Hospital, Whitechapel, and the Thavies Inn Venereal Centre for Pregnant Women, and it was stated that the London Hospital Venereal Department and the Thavies Inn Venereal Centre provided the only residential treatment in the metropolis for pregnant women suffering from venereal disease.

We have been desired by the board of management of the London Lock Hospital to write saying that this is incorrect, as since May, 1918, the London Lock Hospital has had a large maternity department open and working at the Harrow-road institution. During the period from May to December, 1918, 68 married and unmarried pregnant women have been admitted and treated and 42 women delivered, of whom 20 were suffering from syphilis and 22 from gonorrhoea, and 43 babies have been born.

We are informed by Mr. Charles Gibbs, F.R.C.S., and Mr. Arthur Shillitoe, F.R.C.S., honorary surgeons at Harrow-road, that all our pregnant syphilitic patients have a full course of "606" before their confinements. The results are most gratifying, as a large proportion of these women give a negative blood test before confinement and are delivered of children with a negative reaction.

In conclusion we wish to state that intravenous injections of "606" have been given to expectant mothers and babies admitted to the Lock Hospital since February, 1916, and it must be noted that the figures given above only refer to the period May to December of last year.

We are, Sir, yours faithfully,

KINNAIRD,

Chairman of the Board.

J. F. W. DEACON,

Deputy Chairman of the Board.

J. ERNEST LANE,

Chairman of the Medical Committee.

London Lock Hospital and Rescue Home, Harrow-road,
London, W., Jan. 3rd, 1919.

*. We are glad to hear of 42 other women offered efficient treatment in their desperate extremity. But the need must be tenfold greater than the accommodation, and this was the main lesson we wished to draw.—ED. L.

ADVANCES IN THE TREATMENT OF FRACTURES.

To the Editor of THE LANCET.

SIR,—Several letters have appeared in the columns of *THE LANCET* under the above heading emphasising the great work carried out by Major M. Sinclair in his method of extension and immobilisation of fractures of the long bones. It may appear to be ungracious to offer any criticism when the results obtained are so good as far as the length and the alignment of the fractured bone are concerned, but in many cases treated by prolonged immobilisation by Major Sinclair's method there remains a considerable degree of limitation of movement in the joint below the fracture. In the case of the fractured femur this has been overcome by the method devised by Major Besley and subsequently modified by Major W. Pearson, by which the extension is made directly to the lower end of the femur by means of pointed callipers, whilst movement is made frequently in the knee-joint without any interference with the fracture. Major Sinclair's net-frame is of great advantage when, in addition to the fractured femur, there are wounds in the buttock, or when abduction is required, but the arrangement of the more recent fracture bed devised by Major

Pearson allows of an equally simple dressing, &c., without the disadvantages of a special and somewhat cumbersome apparatus.

However, the greatest credit must still be given to Major Sinclair as the originator of methods, even if certain modifications of these methods have been found more efficacious in some forms of fracture.

I am, Sir, yours faithfully,

R. H. JOCELYN SWAN,

Major, R.A.M.C.; Consulting Surgeon, Woolwich District.
Jan. 6th, 1919.

THE CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—In his letter on this subject published in *THE LANCET* of Jan. 4th Dr. Harry Campbell states: "I have again and again referred to the prosaic fact that there are among the inhabitants of this country some 200 million carious teeth, as many alveolar abscesses (pyorrhoea alveolaris), and some 30 million root abscesses." I presume that Dr. Campbell will not object to furnishing some evidence of this "prosaic fact" (?) for the benefit of your readers, many of whom are (like myself) deeply interested in the subject.

I am, Sir, yours faithfully,

R. DENISON PHELEY.

Railway Approach, London Bridge, S.E., Jan. 6th, 1919.

THE PRACTICE OF THE ABSENTEE.

To the Editor of THE LANCET.

SIR,—I cannot understand Dr. F. R. Mallett's indignation with the letter of Dec. 28th, 1918, signed "Major, R.A.M.C. (T.C.)." I am a doctor in general practice who has been to the front and returned to practice. I find on my return that several of my former patients are being treated by professional brethren who remained at home; these patients are not asked if they wish to return to me. There being very little opposition, the doctors who remained at home charged high fees, frequently demanding the money before they left their houses. My midwifery cases who had "booked" the other doctors are not returned to me. New panel patients, who in the ordinary course would have come on my list, have been put on the lists of the doctors who remained, and every difficulty is put in the way of their coming to me.

The doctors who remained at home opened during my absence a surgery within half a mile of my house. It is still open. These tactics will not pay in the long run, but it is a little irritating to those who have undergone the hardships of active service and who have been under shell fire to hear so much about "the overwork" of those who stayed safely at home and who probably earned twice their usual incomes. I would suggest that these overworked gentlemen should join the R.A.M.C. for the demobilisation and so allow their brethren who have been to the front to come back at once and start their practices with less opposition.

I am, Sir, yours faithfully,

Jan. 6th, 1919.

TEMP. R.A.M.C.

To the Editor of THE LANCET.

SIR,—With reference to the correspondence in *THE LANCET* on the above subject, may I state my own case as I have just been demobilised after 20 months' service? I arranged with a neighbour to carry on in my absence, the receipts to be divided between us. There was very little panel (only 100), the rest being private work. The practice is an old-established one, and has never done less than £1000 per year. At the time of handing over there was a visiting list of 20 per day; when I returned I was given a list of six patients *only*, not six per day. During the whole of this time I have received exactly £42 from the private part of the practice and about an equal amount from the panel, which has, of course, steadily got less. My rent and rates are £75 per year, so that had the war continued a little longer I should have been compelled to either give up the house or file my petition.

However, I am so pleased to be back comparatively sound that I do not complain, and if I can only manage to get through this year without getting very much into debt I shall indeed be a happy man. I don't blame anyone, least of all the practitioner who has carried on for me, as

patients naturally go to whom they fancy, and, so long as human nature is as it is, will not always say that they are someone else's patients. Mine may be an extreme case, as upon one occasion I was officially reported killed in action and upon another died after being wounded.

I am, Sir, yours faithfully,

Jan. 6th, 1919.

DEMOLISHED.

PURULENT BRONCHO-PNEUMONIA ASSOCIATED WITH THE MENINGOCOCCUS.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 28th, 1918, Captain J. A. Glover publishes a note describing six cases of broncho-pneumonia. His article bears a title which is wholly misleading. Looking at the heading, and knowing that Captain Glover had charge of the C.-S. Fever Laboratory for the London District, one would expect to find on reading the article that he would bring forward proof of the meningococcus causing broncho-pneumonia. But he does not do so. He simply describes broncho-pneumonia occurring in six patients, three of whom undoubtedly "carried" the meningococcus in their naso-pharynx. Captain Glover quotes notes from Dr. T. H. Jamieson describing the six cases and stating

that "examination of the sputum showed pneumococci." Post-mortem examinations were done on two cases, yet nothing is stated concerning the bacteriology of the broncho-pneumonia found. Captain Glover then states that in his opinion the broncho-pneumonia was probably due to a mixed infection of pneumococci or Pfeiffer's bacillus and meningococci.

Captain Glover is entitled to have his opinion, but before it can be accepted by others he must bring forward proof. Although three out of six cases of broncho-pneumonia were found to be "carriers" of the meningococcus in their naso-pharynx, this is no proof that the broncho-pneumonia was due to this organism. The pneumococcus was found in the sputum in all the cases, and efforts to isolate the meningococcus from one case failed. Even had Captain Glover isolated the meningococcus from the sputum this would not exclude the naso-pharynx as the source. Further, Captain Glover gives no bacteriological proof whatsoever for bringing Pfeiffer's bacillus into the cases. We still await definite bacteriological proof that the meningococcus can cause pneumonia. Captain Glover has not supplied it, and we cannot therefore accept his opinion.

I am, Sir, yours faithfully,

Jan. 4th, 1919.

BACTERIOLOGIST.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR THE MONTHS ENDING

Feb. 28th, 1918.

March 31st, 1918.

| Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. | | | | | | | | | | Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. | | | | | | | | | |
|------------------------------|--------------------------|--|-----------------------------|------|-------------------|-----------------|---------------------------------|----------------|-----------------------------|---------------|-----------------------------|--------|--------------------------|--|-----------------------------|------|-------------------|-----------------|---------------------------------|----------------|-----------------------------|---------------|--|
| | | Insoluble matter. | | | | Soluble matter. | | | | Total solids. | | | | Insoluble matter. | | | | Soluble matter. | | | | Total solids. | |
| | | Tar. | Carbonaceous other than tar | Ash. | Loss on ignition. | Aash. | Sulphate as (SO ₂). | Chlorine (Cl). | Ammonia (NH ₃). | | | | | Tar. | Carbonaceous other than tar | Ash. | Loss on ignition. | Aash. | Sulphate as (SO ₂). | Chlorine (Cl). | Ammonia (NH ₃). | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| ENGLAND. | | | | | | | | | | | | | | | | | | | | | | | |
| Leicester | 38 | 0.33 | 4.92 | 6.89 | 2.37 | 11.26 | 25.74 | 7.00 | 0.34 | 0.10 | Leicester... .. | 10 | 0.04 | 1.08 | 1.75 | 0.85 | 1.52 | 5.24 | 0.83 | 0.22 | 0.06 | | |
| London— | | | | | | | | | | | | | | | | | | | | | | | |
| Meteorological Office | 21 | 0.11 | 1.83 | 3.89 | 1.28 | 2.52 | 9.61 | 0.90 | 0.41 | 0.03 | Meteorological Office... .. | 24 | 0.13 | 2.20 | 3.43 | 1.24 | 3.56 | 10.56 | 1.03 | 0.54 | 0.03 | | |
| Embankment Gardens | 34 | 0.14 | 3.65 | 6.48 | 5.37 | 10.85 | 26.49 | 5.93 | 1.70 | 0.19 | Embankment Gardens | 26 | 0.24 | 3.61 | 8.53 | 0.14 | 9.36 | 21.89 | 2.77 | 1.23 | 0.20 | | |
| Finsbury Park | 37 | 0.15 | 1.50 | 6.01 | 3.49 | 6.52 | 17.68 | 4.40 | 0.65 | 0.06 | Finsbury Park | 10 | 0.04 | 0.20 | 1.07 | 1.13 | 2.58 | 5.01 | 1.62 | 0.27 | 0.04 | | |
| Ravenscourt Park | 23 | 0.09 | 1.27 | 3.42 | 1.35 | 2.73 | 8.85 | 1.69 | 0.28 | 0.08 | Ravenscourt Park | 4 | 0.01 | 0.18 | 0.32 | 0.44 | 0.77 | 1.72 | 0.15 | 0.13 | 0.05 | | |
| Southwark Park | 31 | Tr. | 1.36 | 4.96 | 3.57 | 5.23 | 15.12 | 3.57 | 0.70 | 0.08 | Southwark Park... .. | 9 | 0.06 | 0.68 | 2.22 | 1.43 | 2.39 | 6.77 | 1.33 | 0.45 | 0.06 | | |
| Victoria Park | 16 | 0.05 | 1.27 | 2.99 | 1.51 | 3.45 | 9.28 | 1.66 | 0.22 | 0.08 | Victoria Park* | 22 | 0.07 | 1.96 | 8.86 | 0.79 | 2.40 | 14.08 | 1.18 | 0.33 | 0.06 | | |
| Wandsworth Com. | 17 | Nil. | Nil. | 0.03 | 0.85 | 1.28 | 2.16 | 0.78 | 0.26 | 0.02 | Wandsworth Com. | 22 | 0.07 | 1.96 | 8.86 | 0.79 | 2.40 | 14.08 | 1.18 | 0.33 | 0.06 | | |
| Golden Lane | 23 | 0.16 | 2.26 | 2.68 | 1.71 | 2.79 | 9.59 | 1.22 | 0.84 | 0.84 | Golden Lane | 27 | 0.11 | 2.58 | 3.31 | 1.39 | 3.20 | 10.60 | 1.32 | 0.97 | 0.16 | | |
| Malvern | 28 | Tr. | 0.07 | 0.28 | 0.33 | 0.99 | 1.67 | 0.43 | 0.10 | 0.01 | Malvern | 33 | Tr. | 0.07 | 0.25 | 0.28 | 0.93 | 1.54 | 0.41 | 0.07 | 0.01 | | |
| Manchester— | | | | | | | | | | | | | | | | | | | | | | | |
| Queen's Park | 52 | — | — | — | — | — | 5.70 | — | — | — | Queen's Park | 49 | — | — | — | — | — | 5.01 | — | — | — | | |
| School of Technology | 42 | — | — | — | — | — | 10.60 | — | — | — | School of Technology | 40 | — | — | — | — | — | 12.50 | — | — | — | | |
| Newcastle-on-Tyne | 28 | 0.03 | 2.80 | 4.25 | 1.45 | 2.67 | 11.19 | 1.07 | 0.63 | 0.12 | Newcastle-on-Tyne | 26 | 0.31 | 3.70 | 7.43 | 1.77 | 2.91 | 18.11 | 1.46 | 0.50 | 0.10 | | |
| Rochdale | 30 | 0.60 | 6.74 | 8.53 | 2.39 | 6.85 | 25.11 | 3.28 | 1.51 | 0.24 | Rochdale | 48 | 0.27 | 3.19 | 5.76 | 2.52 | 7.57 | 33.95 | 3.71 | 1.49 | 0.38 | | |
| St. Helens | 30 | 0.60 | 6.74 | 8.53 | 2.39 | 6.85 | 25.11 | 3.28 | 1.51 | 0.24 | St. Helens | 48 | 0.27 | 3.19 | 5.76 | 2.52 | 7.57 | 33.95 | 3.71 | 1.49 | 0.38 | | |
| SCOTLAND. | | | | | | | | | | | | | | | | | | | | | | | |
| Glasgow— | | | | | | | | | | | Glasgow— | | | | | | | | | | | | |
| Coatbridge | 68 | 0.10 | 2.14 | 6.31 | 2.88 | 6.31 | 17.74 | 2.76 | 0.38 | 0.26 | Coatbridge | 32 | 0.09 | 1.68 | 3.95 | 2.37 | 5.60 | 13.69 | 2.72 | 0.18 | 0.19 | | |
| Alexandra Park... .. | 79 | 0.38 | 1.77 | 4.26 | 1.27 | 3.88 | 11.56 | 2.42 | 0.52 | 0.18 | Alexandra Park... .. | 37 | 0.25 | 1.73 | 2.98 | 2.34 | 2.63 | 9.94 | 1.82 | 0.20 | 0.06 | | |
| Bellahouston Park | 105 | 0.17 | 1.39 | 4.18 | 2.22 | 4.90 | 12.88 | 3.47 | 1.00 | 0.07 | Bellahouston Park | 37 | 0.25 | 1.73 | 2.98 | 2.34 | 2.63 | 9.94 | 1.82 | 0.20 | 0.06 | | |
| Blythwood-sq. | 118 | 0.40 | 2.09 | 3.59 | 1.25 | 7.49 | 14.82 | 3.83 | 0.74 | 0.25 | Blythwood-sq. | 36 | 0.12 | 1.89 | 3.63 | 1.53 | 4.07 | 11.24 | 2.08 | 0.27 | 0.10 | | |
| Botanic Gardens | 117 | 0.27 | 0.74 | 6.92 | 1.20 | 6.04 | 15.17 | 2.24 | 0.89 | 0.17 | Botanic Gardens | 40 | 0.13 | 1.40 | 6.35 | 2.12 | 3.34 | 13.34 | 2.01 | 0.16 | 0.12 | | |
| Richmond Park | 107 | 0.26 | 1.70 | 5.00 | 2.18 | 4.16 | 13.28 | 2.92 | 0.36 | 0.22 | Richmond Park... .. | 35 | 0.07 | 1.62 | 5.16 | 1.16 | 4.14 | 12.15 | 2.32 | 0.13 | 0.12 | | |
| Ruchill Park | 119 | 0.38 | 1.25 | 3.33 | 2.25 | 4.91 | 12.12 | 3.42 | 0.75 | 0.17 | Ruchill Park | 24 | 0.24 | 2.36 | 8.58 | 4.17 | 5.69 | 21.44 | 2.28 | 0.10 | 0.04 | | |
| South Side Park | 119 | 0.38 | 1.16 | 4.35 | 1.95 | 5.18 | 12.97 | 3.42 | 0.66 | 0.16 | South Side Park... .. | 33 | 0.13 | 3.80 | 6.25 | 2.76 | 2.59 | 15.53 | 1.95 | 0.14 | 0.08 | | |
| Tollcross Park | 102 | 0.37 | 1.56 | 5.65 | 2.27 | 4.10 | 13.85 | 3.33 | 0.60 | 0.18 | Tollcross Park | 29 | 0.28 | 1.66 | 3.42 | 2.28 | 2.65 | 10.17 | 1.76 | 0.15 | 0.07 | | |
| Victoria Park | 114 | 0.48 | 1.87 | 5.13 | 2.07 | 7.56 | 17.11 | 4.07 | 0.73 | 0.19 | Victoria Park | 37 | 0.16 | 1.26 | 5.19 | 2.07 | 3.10 | 11.88 | 2.19 | 0.19 | 0.10 | | |

Tr. = trace.

* No returns.

† Sample lost.

"Tar" includes all matter insoluble in water but soluble in CS₂. "Carbonaceous" includes all combustible matter insoluble in water and in CS₂. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (a) Approx. 9lb. per acre; (b) 2.56 English tons per sq. mile; (c) 1 g. per sq. metre; (d) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables. The analyses of the rain and deposit caught in the gauge at the Meteorological Office are made in THE LANCET Laboratory.

THE ROYAL INSTITUTE OF PUBLIC HEALTH.—A further course of lectures and discussions on "Public Health Problems under War and After-war Conditions" is being held in the lecture-hall of this Institute (37, Russell-square, London, W.C.1) on successive Wednesdays in January, February, and March at 4 p.m. The subjects include industrial hygiene, the influenza epidemic, clean milk, women and the Ministry of Health, the tuberculosis problem, and after-war reconstruction, and among the lecturers are Dr. T. Carnwath, Captain, R.A.M.C. (T.F.), Professor I. Walker Hall, Professor E. W. Hope, Dr. W. J.

O'Donovan, Mr. P. C. Varrier-Jones, Sir A. Newsholme, Sir Thomas Oliver, and Viscountess Rhondda. The next lecture, on Coal and National Health, will be given by Professor W. A. Bone on Jan. 15th, and the others will be duly announced in the Medical Diary from week to week.—An exhibit of organic arsenical preparations used in the treatment of venereal disease, as well as a striking collection of propaganda pamphlets and posters dealing with the anti-venereal campaign, is on view at the Institute. The latter has been presented to the Institute by Colonel Snow, of the Surgeon-General's Office, U.S. Army.

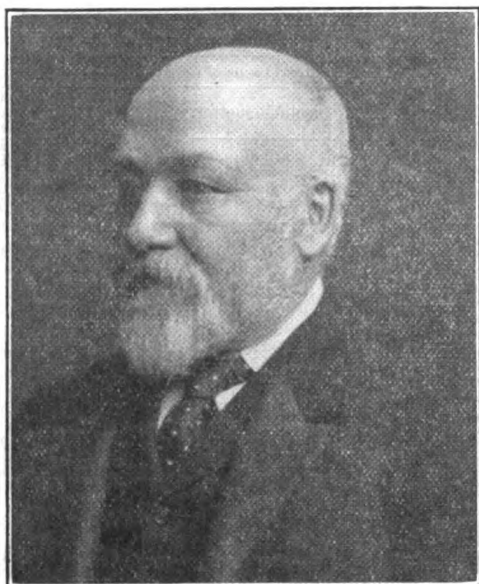
Obituary.

THOMAS BUZZARD, M.D. LOND., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE NATIONAL HOSPITAL FOR PARALYSIS AND EPILEPSY.

THE death occurred last week, at an advanced age, of Dr. Thomas Buzzard, the eminent neurologist. For some time Dr. Buzzard had retired from the practice of his profession owing to ill-health, but until nearly 80 he advised patients to their great benefit, and only two years ago came before the public with an admirable book of personal experiences in the Crimean War.

Thomas Buzzard was born in London in 1831, the son of a solicitor, and was educated at King's College School and the University of London. He left the school young and became apprenticed to a doctor in accordance with the then prevailing methods of entering the medical profession. After apprenticeship he proceeded to King's College Hospital, where his career as a student was successful, and he became house surgeon to Sir William Fergusson. Then came two remarkable opportunities for gaining terrible experience. First he worked in 1854 with John Snow and French in fighting the cholera epidemic in Soho; and in 1855 he went to the



THOMAS BUZZARD, M.D. LOND.

Crimean War, being appointed to the British medical staff of the Ottoman Army, attached to the headquarters of H.H. Omer Pasha. He was present at the siege of Sebastopol, at the second expedition to Kertch, and at the battle of Tchernaiia, and after the fall of Sebastopol he accompanied the second Turkish Army to the Caucasus and took part in the establishment and conduct of base hospitals at Trebizonde and Sinope. For these services he received the Crimean medal with clasp for Sebastopol, the Order of the Medjidie and the Turkish War medal. The story is graphically and modestly set out in his book "With the Turkish Army in the Crimea and Asia Minor: A Personal Narrative," which was published by John Murray in 1916, with illustrations by the author.

On his return from the Crimea he resumed his studies and with such success that he became university medical scholar and later gold medallist in surgery. He graduated M.B. in 1857, and though his displayed and personal bent at the time was strongly towards surgical work he went into general practice as doctor to the St. Luke's district of St. James's parish. Here he remained for some six years, adding to an already great experience considering his age, that first-hand knowledge of life, men, and

manners which made him a practical psychologist as well as a learned clinician. At this time he developed a gift which proved very valuable to him in his after-career. He employed his intimate acquaintance with certain sides of large affairs, as well as of the working life of the lower strata of society, in journalism, turning to writing for the press as a congenial task and an obvious method of adding to resources until private patients came. In 1863 he cut loose from his official work as a parish doctor and started in consultant practice in Green-street, Park-lane. For some time he was regularly on the staff of the *Daily News*, for which paper he had acted as correspondent during the Crimean War, and he also joined the staff of THE LANCET. A feature of this paper at the time was a department entitled the "Mirror of Hospital Practice," the articles which appeared under this title being notes written on the spot by a representative of the paper who was present at the various operating theatres of London. At this time operations were infrequent and were performed at the various hospitals only on certain days of the week and on certain hours of those days. Buzzard's work as a contributor to the "Mirror of Hospital Practice"—this, it may be said, is his own statement—first brought him into touch with the National Hospital at Queen-square, and provoked his interest in neurology and started also his lifelong and intimate friendship with Hughlings Jackson. He was shortly elected to the staff of the hospital, and here, while his main interest in neurology was essentially clinical, he never neglected the pathological side and, indeed, was one of the first to recognise the relationship of bacteriology to neurological problems. Perhaps his chief contributions to our medical knowledge had reference to the discrimination between organic and functional disorders especially in reference to disseminated sclerosis. This line of work was prompted by frequent consultation upon his gynaecological patients with William Playfair, to whom a great many women had recourse who, rightly or wrongly, were supposed to be the subjects of hysteria. Buzzard's book, entitled the "Simulation of Hysteria by Organic Disease," was the outcome of the investigation of such cases, and it was along these lines of medicine that he deservedly made his European reputation. Although he was only attached to one hospital, and that a neurological institution, his knowledge of general medicine saved him from taking narrow or loose views of his patients. He was able to devote a large part of his time to bedside study because he served one hospital only, while he made the most of the wonderful opportunities afforded him at Queen-square. So far was he from being merely a specialist that, in a way, the range of his interests and their large clinical nature probably obscured his scientific position, and to no other reason can we attribute the fact that a man, much of whose work was so original as well as so fruitful of work in others, should never have been invited to become a Fellow of the Royal Society. He was at different times President of the Clinical, Harveian, and Neurological Society, and Foreign Corresponding Member of the Société de Neurologie de Paris.

Although Buzzard wrote with ease and distinction he was not a voluminous author. He contributed the articles on hysteria, sciatica, and tic to "Quain's Dictionary of Medicine," and wrote in the journal of the Ophthalmological Society, to these columns, and to the columns of the *British Medical Journal* upon various neurological subjects. His record of his Crimean experiences, to which we have alluded, shows that had the idea appealed to him he could have easily gained a large public as a writer. He was a good public speaker and had also considerable artistic gifts, was an accomplished painter in water colours, etched with some success, and exhibited on several occasions. He was devoted to travel, and in his later life made many sea voyages, garnering impressions and sketching.

Dr. Buzzard married in 1869 Isabel, daughter of the late Joseph Wass, by whom he had two daughters and four sons, one of whom is Dr. E. Farquhar Buzzard. On the occasion of his marriage he removed from Green-street to 56, Grosvenor-street, where he remained over 20 years, finally moving to 74, Grosvenor-street, where he died. His domestic life was ideally happy, and the loss of his wife, who died in 1901, was a blow which he felt during the remainder of his days. He died very peacefully after a short and mild attack of influenza.

**SIR WILLIAM BARTLETT DALBY, M.A. CANTAB.,
F.R.C.S. ENG.,**

CONSULTING AURAL SURGEON, ST. GEORGE'S HOSPITAL.

WE announced last week the death, at an advanced age, of Sir William Bartlett Dalby, who was a well-known aural surgeon in London a generation ago, as well as a regular contributor to the literature of these subjects in the coöperative medical treatises of the day.

Sir William Dalby was born at Ashby-de-la-Zouche in 1840 and was educated at Sidney Sussex College, Cambridge, and the medical school of St. George's Hospital. He graduated in Arts at Cambridge in 1863, proceeding to the M.B. degree in 1866, and for a time went into general practice at Chester. He soon, however, returned to London, became a Fellow of the Royal College of Surgeons of England in 1870, and decided to specialise in diseases of the ear. He was fortunate in becoming assistant to that singular and famous man James Hinton, who was then practising as an aural surgeon in Savile-row. Hinton died in 1874, but during his last illness Dalby took entire charge of his practice, and on the death of his chief acquired the house and connexion from Hinton's executors. Such a sale of consultant practices was in those days not unusual, though soon afterwards the proceeding was regarded askance, and, as a matter of fact, Hinton himself had purchased the practice and premises in Savile-row from the eminent aural surgeon Toynbee. With such an apprenticeship and such a start Dalby's success was assured, but he soon made a real and original departure, with which his name is not now associated as closely as it should be, for at the time he was a pioneer. No doubt he acquired much both of his theories and his information from Germany, but to Dalby's credit it should be remembered that his advocacy of the instruction of the born-deaf child by lip-reading has transformed a large number of persons afflicted with a grave disability into perfectly capable, competent, and happy citizens. It was for work in this connexion that Dalby received his knighthood in 1886.

During the 20 years between 1875 and 1895 Dalby had a very large practice, and his opinion was sought from all parts of the kingdom. He published a series of lectures on diseases and injuries of the ear, and wrote articles on the same subject in Holmes's "System of Surgery" and Quain's "Dictionary of Medicine," while his "Short Contributions to Aural Surgery" ran through three editions, and deserved its popularity by its wide practical information and its pleasant writing. Dalby was not in any sense a good operating surgeon, and though he may have neglected steps to keep abreast with the surgical operative procedure of his day, it must be remembered that cranial surgery, when he was at the head of his specialty, was in its infancy. As aural surgeon to St. George's Hospital his outpatient clinics were well attended by the students who learned such science and technique as were then generally accepted, and who were often profoundly amused by Dalby's shrewd, humorous, caustic, but kindly attitude towards his patients. Many of the leaders of medicine and surgery of Dalby's day found themselves in an unstable position by the enormous development in operative surgery following on the discovery of Listerian doctrines and the perfection of methods of administering anæsthesia; and undoubtedly Dalby was embarrassed as a man of science by the date of his active work. But he was the main link between the periods of non-operative and operative aural surgery, and the developments in aural surgery following upon the work notably, among others, of Sir William Macewen and Sir Charles Ballance, he wisely determined not to attempt to follow practically. He never performed any complete mastoid operation, leaving such procedures to a younger generation.

Dalby was essentially a man of the world. His elaborately groomed appearance was more that of a leisured country gentleman than that of a leader in a highly technical surgical specialism. His wise if cynical attitude towards life was well displayed in the "Letters of Dr. Chesterfield," which he contributed towards the end of his professional career to the *Cornhill Magazine*, and from a worldly point of view most of what he said wittily in those letters cannot be controverted. He had a host of friends, was a member of the Athenæum, Carlton, and Garrick Clubs, was especially popular among artistic and literary people, was a well-read

Shakespearian scholar, and a keen and constant attendant at the theatres. He rode, shot, fished, and yachted at various periods of his life, out of which he derived far more amusement than most medical men contrive to obtain.

Sir William Dalby married Hyacinthe, the daughter of Major Edward Wellesly, by whom he had two sons and three daughters. His elder son was drowned in a boating accident at Sandhurst; his second son, a soldier, survives him and was wounded in the present war. He leaves also a widow and three married daughters.

REGINALD PERCY COCKIN, M.D. CANTAB.,

ASSISTANT MEDICAL ENTOMOLOGIST, LONDON SCHOOL OF TROPICAL MEDICINE, ETC.

WE regret to record the death of Dr. R. P. Cockin on Dec. 9th, 1918, at Kensington. Dr. Cockin was born at Hull in 1879 and studied at Cambridge, taking his M.A. degree in 1906 and his M.D. in 1913. His medical studies in London were carried out at the London Hospital. After graduating in medicine he acted as casualty house surgeon of Hull Royal Infirmary. Entering the West African Medical Service, he was appointed district surgeon of Okigwi in Southern Nigeria, and later on medical officer of the Niger Cross River Expedition in 1908-1909. In 1910 he was transferred to Cyprus, acting there as a district medical officer and examiner under the Pharmacy Act. In 1913 he was posted to Grenada, West Indies, where he was resident surgeon to the Colony and Yaws Hospitals, and also did bacteriological work. After this he joined the staff of the London School of Tropical Medicine. In 1915 he was appointed a temporary lieutenant in the Royal Army Medical Corps, and went to Egypt with Colonel R. T. Leiper and Captain J. G. Thomson, where he helped in the investigation of bilharziasis. Owing to ill health he had to resign his commission as captain, and resumed his duties at the London School of Tropical Medicine. When the special venereal clinics were formed in London by the Local Government Board, Dr. Cockin started the one at the Albert Dock Hospital, acting as its director.

Dr. Cockin's death in early middle age is a loss to the medical profession, for he was a man of wide experience and high scientific attainments.

URBAN VITAL STATISTICS.

(Week ended Jan. 4th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had declined from 36.5 to 17.8 in the five preceding weeks, rose to 16.1 per 1,000. In London, with a population slightly exceeding 4,000,000 persons, the death-rate was 18.6, or 2.8 per 1,000 above that recorded in the previous week; among the remaining towns the rates ranged from 7.3 in Bristol, 8.8 in Oxford, and 9.0 in Ilford, to 23.2 in Gateshead, 25.4 in Sunderland, and 27.0 in Liverpool. The principal epidemic diseases caused 147 deaths, which corresponded to an annual rate of 0.5 per 1,000, and included 51 from infantile diarrhoea, 49 from diphtheria, 17 from whooping-cough, 14 from measles, 11 from scarlet fever, and 5 from enteric fever. The deaths from influenza, which had steadily declined from 7557 to 581 in the eight preceding weeks, further fell to 441, and included 66 in Liverpool, 65 in London, 19 each in Bristol and Birmingham, and 14 each in Manchester and Leeds. There were 3 cases of small-pox, 1062 of scarlet fever, and 1116 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital; the two latter were 39 below and 11 above the respective numbers remaining at the end of the previous week. The causes of 61 deaths in the 96 towns were uncertified, of which 12 were registered in Liverpool, 8 in Birmingham, 6 in Manchester, and 3 each in Nottingham, Blackpool, South Shields, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns with an aggregate population estimated at 2,500,000 persons, the annual rate of mortality was 16.7, against 14.8 and 16.1 per 1,000 in the two preceding weeks. The 324 deaths in Glasgow corresponded to an annual rate of 15.1 per 1,000, and included 6 from whooping-cough, 3 each from diphtheria and infantile diarrhoea, and 1 from measles. The 145 deaths in Edinburgh were equal to a rate of 17.8 per 1,000, and included 3 from whooping-cough, 2 from diphtheria, and 1 from scarlet fever.

Irish Towns.—The 182 deaths in Dublin corresponded to an annual rate of 23.4, or 3.0 per 1,000 above that recorded in the previous week, and included 2 from whooping-cough and 1 from infantile diarrhoea. The 133 deaths in Belfast were equal to a rate of 17.3 per 1,000, and included 2 from infantile diarrhoea and 1 from measles.

PRIZES of the Paris Académie des Sciences have been awarded as follows: Prix Montyon (physiology) to M. Stephen Chauvet, for a work on Pituitary Infantilism; Prix Lallemand to MM. Henry Landot and Henry Langier, for work on the electrical stimulation of nerves; Prix L. Las Caze to Professor Raphaël Dubois, of Lyon, for contributions to physiology.

The War and After.

MEDICAL DEMOBILISATION.

Sir John Goodwin, the Director-General, Army Medical Service, states that owing to the very urgent requests of the National Service Ministry, the Civil Hospitals, and the Insurance Commissioners, it has been found necessary to demobilise immediately a large number of R.A.M.C. officers to meet the pressing needs of the civil population. The Director-General greatly regrets that, owing to the shortness of the notice, he has not found it possible to see or write personally to all officers on demobilisation, but he would like to assure them of his sincere gratitude for their valuable services and of his warm recognition of the very heavy personal sacrifices made by many of them in their desire to serve their country and to render assistance to the sick and wounded of the Army.

THE SCHEME OF THE CENTRAL MEDICAL WAR COMMITTEE FOR DEMOBILISATION.

A meeting of the Central Medical War Committee was held on Jan. 8th, at which the scheme for demobilisation of medical men was discussed. A circular letter having been sent by the National Insurance Commissioners to the Insurance Committees in England and in Wales, as well as to individual doctors, Sir Robert Morant addressed the meeting to point out that he disclaimed any desire to act in opposition to the Central Medical War Committee. His department, however, he said, must consider first the needs of the civilian population, and he added that, of the 12,000 medical men on the panel before the war, at least one-third were absent, either with the colours or owing to the inevitable wastage of four and a half years; figures which meant that the pre-war standard of medical practice could not be maintained.

The Ministry of National Service having sent out a questionnaire to be completed by medical officers holding commissions in any of the Services, Sir James Galloway explained to the Central Medical War Committee the present position. He indicated that the figure of 1400 had been mentioned as representing the number of practitioners whose return from the Services was urgently required, and that this number was now within sight. The War Office, he said, had found less difficulty than had been anticipated in releasing men, large military hospitals were to be immediately demobilised, and no less than 18,000 V.A.D. beds had already been dismantled.

General Principles of the Scheme.

The scheme for priority of release drawn up by the Central Medical War Committee is intended to apply to the demobilisation on personal and professional grounds of all medical officers serving temporarily with the Forces. It has received the approval of the Ministry of National Service; but as it has not yet been adopted by the Scottish Medical Emergency Committee, it applies at present to practitioners from England and Wales only. The following notes will serve to indicate the principles upon which the scheme is based.

The main object has been to devise a plan which is at once simple, capable of amendment at any time, and easily explained to those concerned. As soon as provision is made for areas in which the medical service has been dangerously depleted it is proposed that the demobilisation of medical officers shall proceed along lines which take into account (a) length of service; (b) age; (c) special personal hardships in connexion with their practices; and (d) family responsibilities. For this purpose the names of those over the age of 30 on Nov. 11th, 1918, will be classified in the following groups: (1) Those who were mobilised at the outbreak of war; (2) those who have served over three years; (3) those who have served between two and three years; (4) those who have served between one and two years; (5) those who have served less than one year. Each group will be divided into four subgroups arranged according to age.

The data for this primary grouping are readily obtainable, definite in character, and easily tabulated; but other factors, less easily tabulated, affecting some officers, must also be taken into account. Information which will be at the disposal of the Central Medical War Committee will enable it to take these special factors into consideration, and then, if necessary, to shift the position of an officer into a different

group from that in which the primary classification has placed him. In this process the following points will be taken into account: (1) Whether he is married or single, and the size of his family, if any; (2) if all the members of a partnership are away, or if the practice is single-handed; (3) his paid appointments (panel or otherwise), if any; whether such appointments are whole-time; and whether they have been kept open for him.

Special claims on financial or other grounds, which are not taken into account in the above method of classification, may be submitted to the Committee for special assessment.

The scheme is as follows:—

PART I.—Men over 30 Years of Age at Date of Armistice—i.e., Men Born on or before Nov. 11th, 1888.

(i.) The following points will be awarded on the grounds of length of service and age:—

| Men mobilised at the outbreak of war (R.N.V.R., R.N.E., R.A.M.C.(T.), & R.A.M.C.(S.R.)): | Points. | Men with over 3 years' service: | Points. |
|--|---------|---------------------------------|---------|
| Over 45 | 30 | Over 45 | 28 |
| 40-45 | 29 | 40-45 | 25 |
| 35-40 | 28 | 35-40 | 24 |
| 30-35 | 27 | 30-35 | 23 |
| Men with over 2 years' service: | Points. | Men with 1 year's service: | Points. |
| Over 45 | 22 | Over 45 | 18 |
| 40-45 | 21 | 40-45 | 17 |
| 35-40 | 20 | 35-40 | 16 |
| 30-35 | 19 | 30-35 | 15 |
| Men with less than 1 year's service: | Points. | | |
| Over 45 | 14 | | |
| 40-45 | 13 | | |
| 35-40 | 12 | | |
| 30-35 | 11 | | |

(ii.) The following points will be added or subtracted in respect of the following modifying conditions:—

- (1) If in whole-time salaried post, subtract 6 points.
- (2) If with no paid appointment or N.H.I. work, add 3 "
- (3) If in single-handed practice, add 3 "
- (4) If all members of partnership are on service, and no member of the partnership is otherwise entitled to more than ... points, add, in case of one partner 4 "
- (5) If married, add 4 "
- (6) If dependents, children or otherwise, 1 point for each dependent up to a maximum of 4 "

(iii.) Additional points may be awarded in respect of financial or other circumstances of an exceptional character which justify a claim to a higher order of priority than that determined by the foregoing provisions. The award of any such additional points would be the subject of special assessment by the Committee, and any man who deems that he has suffered special hardship on such grounds should apply to the Committee for a special consideration of his case on the facts.

(iv.) The order of priority of men of 30 and over shall be according to the net number of points accruing to each man under this part of the scheme, men with a greater number of points ranking before men with a less number of points.

PART II.—Men under 30 Years of Age at Date of Armistice—i.e., Men Born after Nov. 11th, 1888.

(v.) The order of priority determined under Part II. shall be in continuation of the order of priority determined under Part I.

(vi.) The order of priority of men under 30 years at the date of the armistice shall be according to their age, the older before the younger, no priority being, however, accorded as between men born in any one calendar year.

Provided that, in the event of the Central Medical War Committee deciding, upon a special application, that financial or other circumstances exist of an exceptional character which justify a claim by the applicant to a higher order of priority than that accorded under the foregoing provisions, the Committee may award that the applicant should be classed either on a level of priority (under Part II.) with men born in a specified earlier calendar year, or on a level of priority with men entitled to a specified number of points (under Part I.).

THE CASUALTY LIST.

The names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. J. S. Martin, R.A.M.C., was educated at Edinburgh and at St. Thomas's Hospital, London, and qualified in 1895. He held appointments at the Rotherham Hospital and at the Royal Infirmary, Edinburgh, and prior to joining up was in practice at Leigh, Lancs., where he was honorary surgeon to the local infirmary.

Surg. J. M. Pickthall, R.N., qualified in Edinburgh in 1885. He practised in Cornwall and in the Channel Islands, and was latterly surgeon on the Hospital Ship *Oxfordshire*, and the cable ship *Britannia*.

Capt. F. I. Mackinnon, R.A.M.C., qualified at Edinburgh in 1883, and was in Damascus when he joined up for war service. He died at Alexandria from pneumonia.

Capt. W. F. Luton, Canadian A.M.C.

Wounded.

Lieut. A. J. Abreu, I.M.S.

Capt. G. A. Khan, I.M.S.

THE HONOURS LIST.

The following awards to and promotions of medical officers for services at home in connexion with the war or for valuable services in the indicated spheres of operations are announced:—

Services at Home.

K.C.B.—Maj.-Gen. G. J. H. Evans, C.B.; Lt.-Gen. T. H. J. C. Goodwin, C.B., C.M.G., D.S.O., K.H.S., A.M.S.
K.C.M.G.—Maj.-Gen. W. W. Pike, C.M.G., D.S.O., A.M.S.; Temp. Col. J. Atkins, C.M.G., A.M.S.

C.M.G.—Col. H. A. Chisholm, Canadian A.M.C.; Temp. Col. (Hon. Surg.-Gen.) O. S. Ryan, Australian A.M.C.; Lt.-Col. F. Marshall, Australian A.M.C.; Col. B. J. O'Neill, D.S.O., N.Z.M.C.

K.C.B.E.—Temp. Hon. Col. J. L. Thomas, C.B., C.M.G.; Col. H. B. Bruce-Porter, C.M.G., A.M.S. (T.F.).

C.B.E.—Lt.-Col. C. W. Cathcart, R.A.M.C. (T.F.); Col. T. H. M. Clarke, C.M.G., D.S.O., A.M.S.; Col. G. Dansey-Browning, A.M.S.; Lt.-Col. Sir J. Payner, Bart., R.A.M.C. (T.F.); Col. R. Jennings, K.H.S., late A.M.S.; Maj. H. J. Neilson, late R.A.M.C.; Temp. Hon. Maj. H. S. Souttar, R.A.M.C.

O.B.E.—Col. W. H. Bull, V.D., A.M.S. (T.F. Res.); Maj. J. J. Coy, R.A.M.C. (T.F. Res.); Capt. R. Johnson, R.A.M.C. (T.F.); Lt.-Col. J. R. Mallin, late R.A.M.C.; Dr. Adeline Roberts, Q.M.A.A.O., Recruiting Medical Controller; Bt. Col. O. J. W. Tatham, ret. pay, late R.A.M.C.; Capt. J. S. White, R.A.M.C. (S.R.).

M.B.E.—Temp. Capt. J. N. Martin, R.A.M.C.

C.B.E.—Col. G. D. Farmer, Canadian A.M.C.; Col. J. Stewart, Canadian A.M.C.

O.B.E.—Capt. (acting Maj.) J. R. Goodall, Canadian A.M.C.; Lt.-Col. R. Ralke, Canadian A.M.C.; Lt.-Col. A. A. Smith, Canadian Army Dental Corps; Maj. (acting Lt.-Col.) A. W. Winnott, Canadian Army Dental Corps.

C.B.E.—Lt.-Col. (temp. Col.) M. McWhae, C.M.G., Aust. A.M.C.; Col. H. C. Mauley, C.M.G., Aust. A.M.C.

O.B.E.—Maj. P. T. Beamish, Aust. A.M.C.; Maj. J. H. Down, Aust. Army Dental Corps; Lt.-Col. B. M. Sutherland, Aust. A.M.C.; Maj. G. C. Willocks, M.C., Aust. A.M.C.; Lt.-Col. C. Yeatman, Aust. A.M.C.

C.B.E.—Maj. (temp. Lt.-Col.) W. M. Macdonald, N.Z.M.C.; Lt.-Col. H. J. McLean, N.Z.M.C.

O.B.E.—Maj. A. J. Brewis, N.Z.M.C.; Maj. W. Bruce, N.Z.M.C.

C.B.E.—Temp. Lt.-Col. B. N. Thornton, O.B.E., S.A.M.O.

O.B.E.—Temp. Maj. M. G. Pearson, S.A.M.C.

To be Brevet Colonel.—Lt.-Col. P. S. O'Reilly, C.M.G., R.A.M.C.; Lt.-Col. Sir J. G. Rogers, K.C.M.G., D.S.O., ret. pay (late A.M.S.).

To be Honorary Colonel.—Lt.-Col. W. H. W. Elliot, D.S.O., ret., I.M.S.

To be Brevet Lieutenant Colonel.—Temp. Maj. F. S. Brereton, ret. (late R.A.M.C.); Temp. Maj. G. P. Humphrey, R.A.M.C.

To be Brevet Major.—Temp. Capt. R. Bruce-Low, R.A.M.C.; Capt. (acting Maj.) A. A. Jubb, R.A.M.C. (T.F.); Capt. (acting Maj.) A. T. J. McCreery, M.C., R.A.M.C.; Temp. Capt. W. J. Tulloch, R.A.M.C.

Operations in Egypt.

C.B.—Temp. Lt.-Col. H. L. Eason, C.M.G., R.A.M.O.

C.M.G.—Lt.-Col. (temp. Col.) E. P. Sewell, D.S.O., R.A.M.C.

C.B.E.—Temp. Col. C. C. Choyce, R.A.M.C.; Lt.-Col. (temp. Col.) C. Garner, late R.A.M.C.

O.B.E.—Capt. R. Brereton, R.A.M.C. (T.F.); Temp. Capt. F. H. Diggle, R.A.M.C.; Maj. W. Dyson, R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) W. P. Ellis, R.A.M.C.; Temp. Capt. W. W. Forbes, R.A.M.C.; Temp. Capt. N. S. Gilechrist, R.A.M.C.; Maj. F. Grace, R.A.M.C. (T.F.); Capt. D. L. Graham, I.M.S.; Capt. J. Inglis, R.A.M.C. (T.F.); Capt. T. F. Kennedy, R.A.M.C.; Maj. (acting Lt.-Col.) J. W. Mackenzie, R.A.M.C. (T.F.); Capt. (acting Maj.) L. M. V. Mitchell, R.A.M.C. (T.F.); Temp. Capt. C. W. Smith, R.A.M.C.; Lt.-Col. G. R. F. Stammers, R.A.M.C.; Maj. G. C. Taylor, R.A.M.C. (T.F.); Maj. F. B. Treves, R.A.M.C. (T.F.); Capt. (temp. Lt.-Col.) P. S. Vickerman, R.A.M.C. (S.R.); Capt. (acting Maj.) A. P. Watson, R.A.M.C. (T.F.); Temp. Lt. K. R. Madan, I.M.S.

M.B.E.—Capt. J. Green, R.A.M.C. (T.F.).

C.B.E.—Lieut.-Col. I. (temp. Col.) G. P. Dixon, Aust. A.M.C.

O.B.E.—Lt.-Col. O. B. Blackburn, Aust. A.M.C.; Maj. N. H. Fairley, Aust. A.M.C.; Lt.-Col. (temp. Col.) R. Fowler, Aust. A.M.C.; Lt.-Col. (temp. Col.) J. C. Storey, Aust. A.M.C.

M.B.E.—El Yuzbashi Halim Hendi Sulman Shoucair, Egyptian Army M.C.

To be Brevet Colonel.—Lt.-Col. E. H. Powell, D.S.O., R.A.M.O.

To be Brevet Lieutenant Colonel.—Maj. (acting Lt.-Col.) A. W. Gibson, R.A.M.O.

To be Brevet Major.—Temp. Capt. P. H. Bahr, D.S.O., R.A.M.O.

Distinguished Service Order.—Maj. E. B. Austen, att'd. R.A.M.C.; Maj. L. A. Avery, R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) J. Evans, R.A.M.C. (T.F.).

Military Cross.—Capt. (acting Maj.) J. H. Beverland, R.A.M.C. (S.R.); Temp. Capt. G. J. O. Ferrier, R.A.M.C.; Capt. (temp. Maj.) I. P. Harris, R.A.M.C. (T.F.); Capt. W. F. T. Haultain, R.A.M.C. (S.R.); Temp. Lt. B. H. Kamakaka, I.M.S.; Capt. (acting Maj.) L. Milton, R.A.M.C.; Temp. Capt. H. J. Rae, R.A.M.C.; Temp. Capt. F. O. Robbs, R.A.M.C.; Capt. (acting Maj.) A. B. P. Smith, R.A.M.C.; Capt. C. Anderson, Aust. A.M.C.

Operations in Italy.

C.M.G.—Lt.-Col. (temp. Col.) S. A. Archer, R.A.M.C.; Lt.-Col. (acting Col.) H. A. L. Howell, R.A.M.C.; Lt.-Col. J. W. West, R.A.M.C.; Lt.-Col. C. H. Funnell, R.A.M.C.

O.B.E.—Capt. (acting Maj.) T. D. Inch, M.C., R.A.M.C.; Capt. A. Picken, R.A.M.C. (S.R.); Capt. (acting Maj.) J. D. Wells, R.A.M.C. (T.F.).

To be Brevet Colonel.—Lt.-Col. H. Chopping, C.M.G., R.A.M.C.

To be Brevet Lieutenant Colonel.—Maj. (temp. Lt.-Col.) J. G. Bell, D.S.O., R.A.M.C.

To be Brevet Major.—Capt. (acting Col.) W. G. Wright, D.S.O., R.A.M.C.

Distinguished Service Order.—Capt. (acting Lt.-Col.) B. A. Broderick, M.O., R.A.M.C. (T.F.); Temp. Capt. W. Mackenzie, R.A.M.C.

Military Cross.—Temp. Capt. A. H. Macklin, R.A.M.C.

Operations in Salonika.

C.B.—Temp. Col. A. G. Phear; Capt. and Bt. Maj. (temp. Col.) R. H. Kelly, R.A.M.C. (T.F.).

C.M.G.—Lt.-Col. C. B. Martin, R.A.M.C.

O.B.E.—Temp. Capt. (acting Maj.) D. I. Anderson, R.A.M.C.; Temp. Capt. J. C. M. Bailey, R.A.M.C.; Temp. Capt. (acting Maj.) G. V. Bakewell, R.A.M.C.; Capt. (acting Maj.) T. Y. Barkley, R.A.M.C. (S.R.); Lt.-Col. M. Boyle, R.A.M.C.; Temp. Capt. A. H. Coleman, R.A.M.C.; Temp. Capt. J. A. Delmege, R.A.M.C.; Temp. Capt. R. R. Elworthy, R.A.M.C.; Capt. (acting Maj.) W. B. Foley, R.A.M.C. (S.R.); Maj. W. R. Galwey, M.C., R.A.M.C.; Maj. (temp. Lt.-Col.) J. Gray, R.A.M.C. (T.F.); Lt.-Col. J. R. Hodgson, R.A.M.C.; Capt. H. E. McCall, R.A.M.C. (S.R.); Lt.-Col. P. Mitchell, R.A.M.C. (T.F.); Capt. (acting Maj.) J. Taylor, R.A.M.C. (T.F.); Lt.-Col. F. E. A. Webb, R.A.M.C. (T.F.).

M.B.E.—Lt. (temp. Capt., acting Maj.) R. A. Mansell, R.A.M.C.; Temp. Lt. J. Ramsbottom, R.A.M.C.

To be Brevet Lieutenant Colonel.—Maj. (temp. Lt.-Col.) J. A. Anderson, R.A.M.C.

To be Brevet Major.—Capt. (temp. Maj.) R. E. Burnley, M.C., R.A.M.C.; Capt. (acting Maj.) W. F. Christie, R.A.M.C.; Capt. (temp. Maj.) M. J. Williamson, M.C., R.A.M.C.

Military Cross.—Capt. R. D. Cameron, R.A.M.C. (S.R.); Capt. M. O. Cooper, R.A.M.C. (S.R.); Capt. G. B. Ege-ton, R.A.M.C. (S.R.); Temp. Capt. (acting Maj.) G. B. Holroyde, R.A.M.C.; Capt. L. J. Shell, R.A.M.C. (S.R.); Capt. H. W. Terrance, R.A.M.C. (S.R.); Capt. L. H. Wootton, R.A.M.C. (T.F.).

The following is the continuation of the list the first part of which was given in THE LANCET of Jan. 4th, p. 41:—

C.B.E.—Lt.-Col. J. T. Calvert, I.M.S.; Maj. J. H. Murray, I.M.S.; Lt.-Col. F. E. Swinton, I.M.S.; Lt.-Col. J. C. Lamont, I.M.S. (ret.).

C.B.E. (Military Division).—Surg. Capt. G. T. Broach, R.N.; Surg. Capt. V. G. Thorpe, R.N.; Maj. (Hon. Lt.-Col.) M. W. Flack; Acting Lt.-Col. F. F. Muecke.

O.B.E. (Military Division).—Surg. Cdr. R. F. Bates, R.N.; Surg. Cdr. R. Hardie, R.N.; Surg. Lt. A. B. Iles, R.N.; Surg. Lt.-Cdr. L. M. Morris, R.N.; Surg. Cdr. (acting Surg. Capt.) H. L. Penny, R.N.; Surg. Cdr. E. A. Shaw, R.N.; Lt.-Col. B. O. B. Carbery, Maj. B. O. Reilly, Canadian Forces; Maj. F. H. Stephens, A.M.S.; Capt. (temp. Maj.) H. O. Adams, R.A.M.C. (T.F.); Lt.-Col. W. J. P. Adye Curran, R.A.M.C.; Temp. Capt. (acting Maj.) J. A. Arkle, R.A.M.C.; Lt.-Col. (temp. Col.) H. P. W. Barrow, C.M.G., D.S.O., R.A.M.C.; Capt. (acting Maj.) C. B. Baxter, R.A.M.C. (T.F.); Temp. Lt. (acting Lt.-Col.) J. L. Birley, R.A.M.C.; Maj. H. d'A. Blumberg, T.D., R.A.M.C. (T.F.); Capt. (acting Maj.) H. Burrows, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) E. Charles, R.A.M.C.; Capt. A. D. Child, R.A.M.C. (S.R.); Capt. (acting Maj.) S. J. Clegg, R.A.M.C. (T.F.); Temp. Capt. N. A. Coward, R.A.M.C.; Capt. (acting Maj.) W. H. Davison, R.A.M.C. (T.F.); Temp. Maj. W. S. Dickie, R.A.M.C.; Temp. Maj. T. M. Frood, R.A.M.C.; Temp. Maj. (acting Lt.-Col.) G. D. Gray, R.A.M.C.; Capt. (acting Lt.-Col.) F. L. A. Greaves, R.A.M.C. (T.F.); Temp. Capt. A. H. Greg, R.A.M.C.; Capt. (acting Maj.) T. W. Hancock, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) J. H. Hebb, R.A.M.C.; Temp. Hon. Maj. T. Houston, R.A.M.C.; Capt. A. E. Jury, R.A.M.C. (T.F.); Temp. Capt. R. D. Laurie, R.A.M.C.; Temp. Capt. L. R. Lempiere, R.A.M.C.; Maj. (temp. Lt.-Col.) J. A. McCammon, M.C., R.A.M.C.; Temp. Capt. J. W. McLeod, R.A.M.C.; Temp. Capt. (acting Maj.) W. G. Mumford, R.A.M.C.; Capt. J. C. Newman, R.A.M.C. (T.F.); Capt. B. A. Odium, R.A.M.C.; Temp. Capt. R. I. P. Pelieu, R.A.M.C.; Capt. J. Ramsay, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) T. O. Ritchie, R.A.M.C.; Lt.-Col. (temp. Col.) A. B. Soltan, C.M.G.; R.A.M.C. (T.F.); Maj. (temp. Lt.-Col.) W. G. Sutcliffe, R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) T. B. Unwin, R.A.M.C.; Capt. (acting Maj.) W. W. Wagstaffe, R.A.M.C. (S.R.); Temp. Capt. K. M. Walker, R.A.M.C.; Temp. Capt. (acting Maj.) H. B. Wilson, R.A.M.C.; Capt. (acting Lt.-Col.) T. B. Wolstenholme, R.A.M.C. (T.F.); Capt. (acting Lt.-Col.) F. Worthington, D.S.O., R.A.M.C.; Lt.-Col. P. G. Brown, Canadian A.M.C.; Maj. J. F. Burgess, Canadian A.M.C.; Maj. R. J. McEwan, Canadian A.M.C.; Lt.-Col. H. E. Munroe, Canadian A.M.C.; Maj. H. Orr, Canadian A.M.C.; Maj. D. M. Hmbelton, Australian A.M.C.; Maj. C. N. Finn, Australian A.M.C.; Maj. (temp. Lt.-Col.) A. F. Maclure, Australian A.M.C.; Lt.-Col. W. D. G. Upjohn, Australian A.M.C.

To be Major General.—Col. (temp. Maj.-Gen.) J. Thomson, C.B., A.M.S.

To be Brevet Colonel.—Lt.-Col. (temp. Col.) R. S. H. Fuhr, C.M.G., D.S.O., R.A.M.C.; Lt.-Col. (temp. Col.) A. G. Thompson, C.M.G., D.S.O., R.A.M.C.

To be Brevet Lieutenant Colonel.—Maj. (temp. Lt.-Col.) R. A. Bryden, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) P. J. Hanafin, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) H. S. Peeke, R. of O., late R.A.M.C.; Maj. (temp. Col.) D. Rorie, D.S.O., R.A.M.C. (T.F.); Maj. G. P. Sheehan, D.S.O., R.A.M.C.

To be Brevet Major.—Temp. Capt. S. P. Hodgkinson, R.A.M.C.; Capt. (acting Maj.) W. L. Webster, R.A.M.C.

P.S.O.—Surg. Lt.-Cdr. H. D. Drennan, R.N.; Capt. (temp. Lt.-Col.) J. Barkley, R.A.M.C. (T.F.); Capt. (acting Lt.-Col.) R. Burgess, M.C., R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) A. Callan, R.A.M.C. (T.F.); Capt. (acting Lt.-Col.) L. D. B. Cogan, R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) H. H. Cox, R.A.M.C. (T.F.); Capt. (acting Lt.-Col.) F. G. Dobson, R.A.M.C. (T.F.); Capt. (acting Maj.) T. I. Dun, M.C., R.A.M.C.; Capt. (temp. Lt.-Col.) O. W. Hames, R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) G. T. Edmunds, R.A.M.C.; Maj. (acting Lt.-Col.) W. H. Forsyth, R.A.M.C.; Capt. (acting Lt.-Col.) C. J. A. Griffin, R.A.M.C. (S.R.); Capt. (acting Lt.-Col.) C. Helm, M.C., R.A.M.C.; Temp. Capt. (acting Maj.) A. E. Knight, M.C., R.A.M.C.; Capt. (acting Lt.-Col.) O. L. Lander, M.C., R.A.M.C. (T.F.); Maj. (acting Lt.-Col.) S. G. McAllum, R.A.M.C. (S.R.); Lt.-Col. (temp. Col.) F. McLennan, R.A.M.C.; Capt. (acting Lt.-Col.) J. Macmillan, M.C., R.A.M.C.; Capt. (acting Lt.-Col.) O. M. Page, R.A.M.C. (S.R.); Temp. Capt. (acting Maj.) M. P. Paton, M.C., R.A.M.C.; Maj. (acting Lt.-Col.) T. T. H. Robinson, R.A.M.C.; Maj. (acting Lt.-Col.) J. H. Stephen, R.A.M.C. (T.F.); Temp. Capt.

(acting Lt.-Col.) R. Svensson, M.C., R.A.M.C.; Capt. (acting Lt.-Col.) J. Young, R.A.M.C. (T.F.); Temp. Lt.-Col. C. W. Vipond, Canadian A.M.C.; Maj. (acting Lt.-Col.) J. H. Wood, Canadian A.M.C.; Lt.-Col. R. W. Chambers, Australian A.M.C.; Lt.-Col. W. B. L. H. Crowther, Australian A.M.C.; Maj. (temp. Lt.-Col.) E. F. Lind, Australian A.M.C.; Lt.-Col. G. W. Macartney, Australian A.M.C.; Maj. A. McKillop, Australian A.M.C.; Maj. C. Morlet, Australian A.M.C.; Maj. W. A. Morton, Australian A.M.C.; Maj. V. W. Savage, Australian A.M.C.; Maj. W. O. Sawers, Australian A.M.C.; Lt.-Col. G. Craig, N.Z.M.C.

Second Bar to the Military Cross.—Capt. H. K. Ward, M.C., R.A.M.C. (3.R.).

Bar to the Military Cross.—Temp. Capt. (acting Maj.) J. Biggam, M.C., R.A.M.C.; Capt. E. J. Bratley, M.C., R.A.M.C. (S.R.).

Military Cross.—Temp. Capt. R. J. Aherne, R.A.M.C.; Capt. (acting Maj.) W. R. Blore, R.A.M.C. (S.R.); Temp. Capt. A. Buchanan, R.A.M.C.; Capt. (acting Maj.) W. B. Cathcart, R.A.M.C. (S.R.); Capt. (acting Maj.) G. O. Chambers, R.A.M.C.; Temp. Capt. C. F. Drew, R.A.M.C.; Capt. B. McM. Dunlop, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) J. Gibson, R.A.M.C.; Capt. F. H. Guopy, R.A.M.C. (S.R.); Temp. Capt. (acting Maj.) E. L. M. Hackett, R.A.M.C.; Capt. G. L. Matthews, R.A.M.C.; Capt. (acting Maj.) C. Nicholson, R.A.M.C. (S.R.); Capt. (acting Maj.) A. P. O'Connor, R.A.M.C.; Temp. Capt. J. F. Powell, R.A.M.C.; Temp. Capt. C. R. Reckitt, R.A.M.C.; Capt. (acting Maj.) H. B. S. Richards, R.A.M.C. (T.F.); Capt. (acting Maj.) F. M. W. Rogers, R.A.M.C. (T.F.); Temp. Capt. S. P. Stoker, R.A.M.C.; Capt. (acting Lt.-Col.) D. H. Weir, R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) B. Whitehead, R.A.M.C.; Temp. Capt. J. Wyllie, R.A.M.C.; Capt. N. J. MacKay, Australian A.M.C.; Capt. N. H. Dempster, N.Z.M.C.; Capt. A. D. S. Whyte, N.Z.M.C.

Katani-Hind Medal, 1st Class.—Mr. J. D. Price, Civil Surgeon, Nowgong, Assam.

MENTIONED IN DESPATCHES.

In a lengthy and most interesting despatch dealing with the brilliant victories of the British Army on the Western front which led up to the signing of the armistice on Nov. 11th last, Sir Douglas Haig pays the following tribute to the medical services:—

During the period under review the medical services, under the direction of Lieut.-General C. H. Birtchall, deserve special commendation for the initiative, energy, and success which have characterised all branches of their work. The rapid advance of the troops and the extended front on which operations were carried out during the final stages of the offensive created problems in connexion with the collection, evacuation, and treatment of wounded which had not been met with in the earlier phases of the war. These difficulties were met with the most admirable promptness and efficiency.

My thanks are due to the consulting surgeons and physicians for the invaluable assistance given by them in the application of new methods to the treatment of wounds and disease; to the R.A.M.C. officers and permanent staffs of the convalescent depôts for work which enabled many thousands of men to be restored to the fighting ranks; to the untiring and devoted work of the British Red Cross Society, the Order of St. John, and all members of the nursing service, whose unremitting kindness and constancy have done much to alleviate the sufferings of the sick and wounded; and, finally, for the very valuable services rendered by the base hospital units and by individual officers of the Medical Corps of the United States of America attached to the British Army.

The following medical officers of the Royal Air Force are mentioned in despatches for distinguished service in war areas:—

Surg. W. A. S. Duck, R.N. (Adriatic); Temp. Surg. A. L. Dykes, R.N. (Adriatic); Temp. Surg. R. S. Overton, R.N. (Mediterranean); Fleet Surg. C. E. C. Stanford, D.S.O., R.N. (Adriatic).

Also the following for distinguished and gallant services and devotion to duty in connexion with the operations of the British Force in Italy:—

Army Medical Service: Staff.

Lt.-Col. (temp. Col.) S. A. Archer; Lt.-Col. A. Chopping, C.M.G.; Capt. (acting Maj.) M. Copland, D.S.O., R.A.M.C. (T.F.); Col. J. V. Forrest, C.M.G.; Capt. (acting Maj.) T. D. Inch, M.C.; Temp. Capt. (acting Maj.) B. H. Lucas, M.C.; Maj.-Gen. F. R. Newland, O.B., C.M.G.; Lt.-Col. (temp. Col.) E. Pickard, C.M.G., T.D., R.A.M.C. (T.F.); Temp. Col. H. H. Tooth, C.B., C.M.G. (Lt.-Col., R.A.M.C. (T.F.)); Capt. (temp. Maj.) S. J. A. H. Walsh, D.S.O., R.A.M.C. (S.R.); Temp. Col. G. G. Watson, C.M.G.; Capt. (acting Maj.) J. D. Wells, R.A.M.C. (T.F.); Col. T. Du B. Whalley, C.M.G.

Royal Army Medical Corps.

Temp. Capt. C. J. Armstrong-Dash; Maj. (temp Lt.-Col.) J. G. Bell; D.S.O.; Maj. (acting Lt.-Col.) C. Bramhall; Temp. Capt. D. Fisher; Lt.-Col. C. H. Furnivall; Temp. Capt. H. B. T. Gamlen; Temp. Capt. D. G. Gardiner; Temp. Capt. (acting Maj.) J. Greene, M.C.; Temp. Capt. (acting Maj.) J. S. Hall; Lt.-Col. (acting Col.) H. A. L. Howell; Temp. Capt. W. Mackenzie; Temp. Capt. S. Marle; Temp. Capt. J. B. Matthews; Temp. Capt. (acting Maj.) A. A. Miller; Capt. (acting Maj.) J. A. Renshaw; Temp. Capt. (acting Maj.) R. H. Rollinson-Whitaker; Temp. Capt. H. S. Thomas; Capt. (acting Lt.-Col.) R. W. Vaughan, M.C.; Lt.-Col. J. W. West; Capt. (acting Col.) W. G. Wright, D.S.O.

Royal Army Medical Corps (S.R.).

Capt. J. E. Allan; Capt. (acting Maj.) T. O. Graham; Capt. A. Picken.

Royal Army Medical Corps (T.F.).

Capt. K. S. Beken; Capt. (acting Lt.-Col.) R. A. Broderick, M.C.; Capt. (acting Maj.) J. A. Davies; Capt. (acting Maj.) W. O. Hodges; Capt. G. Moore, M.C.; Capt. P. Moxey.

The following should be added to the list of those mentioned in despatches given in THE LANCET of Jan. 4th, page 41:—

Canadian Army Medical Staff.—Col. C. A. Peters, D.S.O.; Brig.-Gen. A. H. Ross, C.B., C.M.G.; Col. R. M. Simpson, D.S.O.; Col. R. P. Wright, D.S.O.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are notified:—Surg. Com. W. H. Daw to *Donegal*; Surg. Lieut.-Com. R. C. Holton to *Bristol*; Surg. Lieut. I. S. Gabe to Royal Marine Division, Chatham.

ROYAL NAVAL VOLUNTEER RESERVE.

Temp. Surg. Lieut. H. G. Davies, R.N.V.R., who has been invalided on account of ill-health contracted in the service, to retain his rank.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonels to be acting Colonels while employed as Assistant Directors of Medical Services of a Division: A. E. Hamerton, H. C. R. Hime, (Brevet Col.) G. J. A. Ormsby.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major W. J. Weston; Capt. W. Tyrrell.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Capt. G. F. Rudkin, Capt. (acting Major) M. White, Capt. H. H. Leeson, Capt. (acting Major) M. J. Williamson, Major W. E. C. Lunn, Capt. (acting Major) J. B. A. Wigmore, Capt. (acting Major) G. D'R. Carr, M.C.

Lieut.-Col. F. S. Le Queane, V.C., is placed on retired pay.

Temporary Colonels relinquishing their temporary commissions on re-posting: R. B. Kelly (Captain, R.A.M.C., T.F.), H. A. Ballance (Major, temp. Lieut.-Col., R.A.M.C., T.F.).

Lieut.-Col. J. E. Brogden is placed temporarily on the Half pay List. To be acting Majors: Capt. B. Varvill, K. P. Mackenzie, W. E. Tyndall; Temp. Capt. A. W. P. Todd, W. K. A. Richards, D. J. Stokes, J. H. Hood, J. Rodger, D. S. Graham, D. E. Williams, O. N. Oost, A. L. Saunders, R. Felton, G. S. Brown, and D. M. Ross, and W. H. Scott while commanding troops on a Hospital Ship.

Temp. Capt. relinquishing the acting rank of Major on re-posting: R. V. Doloy, W. D. Cruickshank, W. G. Johnston, W. K. A. Richards, K. Wilson.

J. E. Briscoe to be Captain.

Temp. Hon. Capt. H. O. Stansfield to be acting Major whilst specially employed.

Temporary Lieutenants to be temporary Captains: F. W. Daniels, S. B. Turner, D. Holroyde.

Temp. Hon. Lieut. A. C. Delacroix to be temporary honorary Captain.

Officers relinquishing their commissions:—Temp. Majors: A. H. Bindloss, J. B. Howell, Temp. Hon. Major W. C. G. Ashdowns, Temp. Capt. G. Denholm, A. G. H. Lovell, G. N. Limer, T. Claperton, E. A. Miller, R. J. McPeeters, C. J. A. N. Mercier, C. M. Young, M. J. Ryan, W. G. B. Gunn, (Acting Major) B. H. Barton, F. J. Child, E. C. Bourdas, A. B. Aitken, C. E. Lakin, C. S. Kingston, J. A. Gray (Home Hospital Reserve), A. Westerman, A. R. Jordan, A. C. Hallowes, J. B. McMorland, J. E. English, H. Dyer, A. Dingwall, T. E. Ferguson, S. Vosper, R. J. Helsby, (Acting Major) E. L. M. Hackett, W. Rolland, W. W. Livingston, J. A. Davidson, H. M. Raven, E. C. Roberts, H. P. Newsholme, A. D. Hunt, (Acting Major) W. Anderson, G. Hardwicke, M. J. Liddell, J. L. Cochrane, J. R. Tibbles, G. D. E. Tullis, J. B. Ferguson, (Acting Major) R. Warren, A. Currie, W. A. Young, M. J. Horgan, E. E. M. Price, W. R. Bayne, H. S. Gabb, R. F. Moore, A. F. W. Denning, H. L. Tide, J. H. Porter (Acting Major) C. H. S. Webb, K. W. D. MacRae, N. Morris, H. S. A. Hogg, N. A. Coward, O. W. Jones, R. D. Smedley, F. P. Fisher, G. Allison, G. B. Wilkinson, R. M. Liddell, (Acting Major) W. Rankin, (Acting Major) R. H. Paramore, T. L. Wormald, B. H. Walker, (Acting Major) J. L. Gordon, S. Carter, A. J. V. McDonnell, C. R. Willis, A. Gillespie, W. H. Pallett, R. M. Soames, J. O. Skewington, T. S. Sharpley. To retain the rank of Captain: E. B. Struthers. On account of ill-health contracted on active service and to retain the rank of Captain: A. C. B. Biggs, A. H. Sinclair, D. W. Jones, (Acting Major) W. A. Rogers. On account of ill-health contracted on active service. C. Dundee, D. C. Alexander, F. L. Brewer, H. L. Marlyn. On account of ill-health and to retain the rank of Captain: A. W. F. Edmunds, J. McCartney. On account of ill-health: Temp. Hon. Capt. R. M. Blake (on ceasing to serve with the British Red Cross Society in France), J. M. Smith on account of ill-health and is granted the rank of Lieutenant. Temp. Lieuts.: C. J. E. Edmunds, F. P. R. James, A. Linn, G. S. Ward, D. G. Gellatly, F. G. F. Browns, D. Davies, D. Holroyde, H. Caird, W. J. N. Todd, R. Hamer, A. L. Black, W. L. Hogan, F. W. Hobbs; Temp. Hon. Lieut. J. P. Griffin (on ceasing to serve with the British Red Cross Hospital, Neuilly).

Canadian Army Medical Corps.

Temporary Lieutenants to be temporary Captains: J. W. Harper, G. Leith, A. E. Kennedy, D. MacDougall, P. H. McNulty, G. A. Minorgan, W. E. Munro, J. B. Pritchard, E. Wershof, A. S. McCann.

Canadian Army Dental Corps.

Temp. Lieut. C. W. Smith, from Canadian Machine Gun Corps, to be temporary Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Capt. F. G. Foster and S. J. V. Furlong to be acting Majors.

Lieut. J. F. Cunningham relinquishes his commission on account of ill-health.

Second Lieut. E. P. Whiteman to be Lieutenant.

TERRITORIAL FORCE.

General List.—Capt. (Brevet Major) (acting Lieut.-Col.) R. O. Dun, relinquishes his acting rank on ceasing to be specially employed.

Capt. (acting Majors) J. Walker, F. W. O. Brown, and F. H. Lacey relinquish their acting rank on ceasing to be specially employed.

Major (acting Lieut.-Col.) D. G. Campbell relinquishes his acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: J. W. Thomson, J. W. Craven, J. O. Newman, R. M. Wilson.

Capt. J. W. Keay to be Major.

1st Eastern General Hospital: Major (acting Lieut.-Col.) H. A. Ballance relinquishes his acting rank and is restored to the establishment.

1st London Sanitary Company: Lieut. S. W. Wingfield to be Captain.

1st London General Hospital: Capt. P. Hamill is restored to the establishment.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. W. E. Foggie, from 3rd Highland Field Ambulance, to be Lieutenant-Colonel.

Majors F. N. Grinling, W. T. Rowe, D. G. Campbell, A. C. Turner, B. R. Dyer, J. R. Garrod, B. G. Ewing, G. F. R. Smith, A. A. Gunn, from Attached to Units other than Medical Units, to be Majors.

Major (acting Lieut.-Col.) P. G. Williamson, from Attached to Units other than Medical Units, to be Major.

A. A. W. Merrick, from 3rd West Lancs. Field Ambulance to be Major.

Capt. J. R. Chalmers and C. W. Greene from 1st Home Counties Field Ambulance, to be Captains.

Capt. (acting Major) A. R. Muir, from Lowland Mounted Brigade Field Ambulance, to be Captain.

Capt. N. T. K. Jordan, from South Wales Mounted Brigade Field Ambulance, to be Captain.

Capt. (acting Major) J. G. Cooke, from Attached to Units other than Medical Units, to be Captain.

Capt. (acting Major) H. F. W. Boeddicker, from 1st South Midland Field Ambulance, to be Captain.

Capt. P. H. Lacey, from Welsh Border Mounted Brigade Field Ambulance, to be Captain.

Capt. L. A. Mackenzie, from 1st West Riding Field Ambulance, to be Captain.

Capt. A. A. Pratt, from 4th Northern General Hospital, to be Captain.

Capt. H. Stonehouse, from the 2nd Northern Field Ambulance, to be Captain.

Capt. W. J. Wilkinson, from 2nd East Anglian Field Ambulance, to be Captain.

Capt. W. Bailey-Thomson, from Notts and Derby Mounted Brigade Field Ambulance, to be Captain.

Capt. G. H. Kirby, from South Midland Casualty Clearing Station, to be Captain.

Capt. J. H. Paul, from Yorks Mounted Brigade Field Ambulance, to be Captain.

Capt. W. L. Hibbert, from Home Counties Casualty Clearing Station, to be Captain.

Capt. D. Macnair, from 2nd Wessex Field Ambulance, to be Captain.

Capt. H. N. Crowe, from 2nd South Midland Field Ambulance, to be Captain.

Capt. (acting Major) H. C. Adams, from 2nd Wessex Field Ambulance, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Major J. L. Byles to be acting Lieutenant-Colonel while employed as Lieutenant-Colonel. The following are granted temporary commissions: As Lieutenant-Colonel: Surg.-Commander C. R. C. Stanford. As Majors: Acting Majors: R.A.M.C., W. W. Shorten, T. J. Kelly, B. H. Robinson; Staff-Surge, R.N., F. H. Stephens, A. V. J. Richardson. As Captains (acting Majors while specially employed): Acting Majors, R.A.M.C., M. N. Perrin, J. H. Porter. As Captains: Surg. Lieut., R.N., W. A. S. Duck, D. S. Stevenson, P. B. Gillespie, D. Ross, R. W. Meller, A. L. Dykes, L. S. Goss, R. B. Adams, J. H. M. Sanderson, B. McLean; Surg. Lieut., R.N.V.R., C. F. A. Hereford, T. B. Dixon, D. A. Macpherson; Capt., R.A.M.C., D'Arcy Power, J. H. Owen, A. Sutcliffe, J. M. Wyatt, F. A. Hampton, N. C. Graham, A. G. H. Smart, L. W. Shelley, C. P. Seals, E. W. Craig, W. J. McKeand, A. G. H. Moore, W. S. T. Connell, J. Freeman, G. Cranston, W. Waugh, O. F. Graves, D. H. Fraser, W. H. Cam, J. W. Kay, A. D. Kennedy, J. B. Laessle, C. H. Thompson, J. E. Dunbar, V. T. Ellwood, J. H. Cooke, P. H. Young, J. Chamberé, T. N. Wiltshire, A. Litch, C. K. Atlee, O. W. W. James, W. B. Dove.

G. D. M. Beaton (temporary Lieutenant, R.A.M.C.) is granted a temporary commission as Lieutenant.

Dental Branch.—As Captains: J. Barratt, G. Dawson, L. S. Woodliffe.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, LTD., London.

A League of Nations with Large Powers. By F. N. Keen, LL.B. With Preface by the Rt. Hon. Sir W. H. Dickinson, K.B.E., M.P. 1s.

CHURCHILL, J. AND A., London.

Year Book of Pharmacy. Edited by J. O. Braithwaite and Others. Sanitation in War. By Lieutenant-Colonel P. S. Lelean, R.A.M.C. 3rd ed. 7s. 6d.

HODDER AND STOUGHTON, London.

One Man's View. By L. Merrick. With an Introduction by Granville Barker. 6s.

How to Reduce Your Income Tax by Liberty Currency. By A. E. Sitwell. 1s. 3d.

JACK, T. C. AND E. C., London.

An Introduction to the Study of Biological Chemistry. By S. B. Schryver, D.Sc. 6s.

LIBRARY PRESS, London.

Physiology of Industrial Organisation and the Re-employment of the Disabled. By Professor J. Amar. Translated by A. F. Stanley Kent, D.Sc. 3s.

MARION ET CIE., ÉDITEURS, Paris.

Leçons de Chirurgie de Guerre. Publiées, sous la direction de Cl. Regaud, de l'Institut Pasteur de Paris. 9 fr. (+ 10 per cent.)

UNIVERSITY PRESS, Cambridge.

Calendar for 1918-1919. 10s. 6d.

UNIVERSITY OF LONDON PRESS, London.

Regulations for External Students of the University of London. 1s. 6d. Calendar of the University of London, 1918-1919. 1s. 6d.

YEAR BOOK PUBLISHERS, Chicago.

Practical Medicine Series. Vol. V., Gynecology. Edited by E. U. Dudley, M.D. Obstetrics. Edited by J. B. de Lee, M.D. Series 1918. \$1.60.

THE position of French medical students still on active service is being considered by an Inter-Ministerial Commission over which M. Damany, méd. de 1. classe, presides.

THE LANCET, VOL. II., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET which was completed with the issue of Dec. 28th, 1918, is in preparation. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

Medical News.

UNIVERSITY OF ABERDEEN.—The following degrees were conferred recently:—

M.B. and Ch.B.—Patrick Stephen Gerrard Cameron, Marjory Johnston Dufton, Anne Simpson, and John Geddes Smith (second-class honours).

ROYAL SOCIETY OF MEDICINE.—The Section for the Study of Disease in Children will hold a discussion upon the Etiology, Prevention, and Non-operative Treatment of "Adenoids" at 1, Wimpole-street, on Friday, Jan. 24th, at 5 P.M. The discussion will be opened by Dr. Harry Campbell and Dr. Edmund Cantley.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—An ordinary meeting of this society will be held to-day (Friday, Jan. 10th) in the society's rooms, West London Hospital, at 8.30 P.M., when a paper will be read by Major W. McAdam Eccles, entitled "Stumps and their After-treatment."

MEDICAL MAGISTRATE.—Dr. G. W. Eustace, ex-Mayor of Arundel, has been placed on the commission of the peace for Sussex. He was awarded the Military Cross for gallantry at Ypres in September, 1917, being then attached to the Queen Victoria Rifles. Dr. Eustace also served in the South African War, receiving the medal and three clasps.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—A meeting of the General Council of King Edward's Hospital Fund for London was held on Jan. 6th at the offices of the Fund, 7, Walbrook, E.C., the Right Hon. James W. Lowther, M.P. (Speaker of the House of Commons), in the chair, when the order of appointment to the council, committees, and executive was read, and the resolutions providing for the work of the Fund for 1919, approved by the governors on Dec. 17th last, were formally adopted.

KING GEORGE'S FUND FOR SAILORS.—At a meeting of the general council of this fund, which was held at Trinity House on Dec. 20th last, it was announced that £50,000 had been allocated to the Marine Benevolent Institutions. The fund has for its object the amelioration of distress among seamen and their dependents, and letters were read at the meeting from the King and other members of the Royal Family expressing their gratification at the success of the fund and their appreciation of the generous response on the part of the public, both in this country and in the dominions and colonies. His Majesty expressed the wish that next year the donations might reach a total of £1,000,000.

UNIVERSITY OF EDINBURGH.—The following medical items from the annual report for 1917-18 are of interest:—

During the academic year 1917-18 the total number of matriculated students was 2091, of whom 1339 were men and 752 were women. Of these there were enrolled in the Faculty of Medicine 1147 (823 men and 324 women—an increase of 84 up in the number of women for the previous session). Of the students of medicine, 588, or over 51 per cent., belonged to Scotland; 199, or over 17 per cent., were from England and Wales; 26 from Ireland; 299, or 26 per cent., from British Dominions, Colonies, and Dependencies of whom 76 came from India and 25 from foreign countries. The following medical degrees were conferred: Bachelors of Medicine and Bachelor of Surgery 106, Doctor of Medicine 15. The total annual value of the University fellowships, scholarships, bursaries, and prizes now amounts to about £21,485, of which £25610 belongs to the Faculty of Medicine. The coming of peace has already brought back many former students, and others have entered the commencement of whose course had been delayed by military service. When the spring term opens there will be a further large augmentation of numbers in all departments of study. The University authorities are addressing themselves to the various problems which lie ahead, and it is hoped that, aided by some reasonable relaxation of preliminary requirements and by the provision of courses of instruction adapted to the special needs of the time, the case of the returning student will be adequately and even generously dealt

with. The University of Edinburgh, in common with the other universities of Great Britain, has drawn up a statement of its most pressing financial needs, and it is anticipated that the Government will supplement their existing grants to some extent. Two vacancies have occurred during the year in the ranks of the professoriate, one by resignation, the other owing to death. Sir Thomas Fraser resigned, as from the end of September, the chair of materia medica, which he had held for 41 years, adding lustre to the University during this long period, not less by the importance of his scientific investigations than by his success as a teacher. He has been succeeded by Mr. A. R. Cushny, who was formerly professor of materia medica and pharmacology in the University of London. The deaths of two University lecturers are recorded—viz. Dr. W. G. Smith, who was appointed to the George Combe Lectureship in Psychology on its institution in 1906, and who, in spite of indifferent health, discharged the duties devolving upon him with exceptional competence and devotion; and Mr. Denis Cotterill, one of the lecturers in clinical surgery, who for several years rendered services of the highest value in connexion with No. 11 Hospital, Rouen. Sir William Watson Cheyne, Bart., K.C.M.G., has been elected as one of the three Parliamentary representatives for the universities of Scotland. Among the benefactions is a bequest by the late Dr. Grace R. Cadell, to the University, jointly with the Edinburgh Hospital for Women and Children and Hospice, of the residue of her estate; the moiety falling to the University being "to help in the medical education of women in that University."

Lord Ashton, of Ryelands, Lancaster, has sent to the Preston Royal Infirmary a cheque for £2000 to free the institution from debt.

THE subscriptions to the French War Medical Assistance Fund have reached a total of more than a million francs. This fund also makes grants to the families of medical men. Its address is 5 rue de Surène, Paris.

UNIVERSITY OF LONDON.—Dr. John W. H. Eyre (Guy's Hospital Medical School) has been appointed professor of bacteriology, and Dr. Arthur E. Boycott, F.R.S., has been reappointed director, and Dr. C. Bolton, F.R.S., acting director, of the Graham Legacy Laboratory, during Dr. Boycott's absence on military duty.—In cooperation with the London County Council the University has arranged a series of five lectures for teachers on "Surgery, Ancient and Modern, with special reference to Lister and Pasteur," which will be delivered by Sir Rickman J. Godlee at University College on Wednesdays, at 5.30 p.m., beginning on Jan. 22nd. Sir Cooper Perry will preside at the opening lecture.

Communications, Letters, &c., to the Editor have been received from—

A.—Surg.-Lieut. A. L. Abel, R.N.; Messrs. Abdulla and Co. Ltd.; Major G. L. Arnold, R.A.M.C.; Army Medical Service, Lond.; Director-General of.
B.—Dr. B. F. Buzzard, Lond.; Dr. C. Burland, Blundellsands; Messrs. Butterworth and Co. (India) Ltd., Calcutta; Lt.-Col. H. W. Bayly, R.A.M.C.(T); Mr. J. L. Bakerston, Lond.; Dr. A. G. Bateman, Lond.; Capt. T. G. Brown, Lond.; Birmingham Medical Officer of Health of; Surg.-Capt. P. W. Bassett-Smith, O.B. C.M.G., R.N.; Mr. E. A. Barton, Lond.; Dr. C. Bose, Calcutta.
C.—Dr. F. G. Crookshank, Lond.; Canadian War Records Office in Charge of Lond.; Mrs. E. M. Corbett, Beaconsfield; Mr. F. Coca, Madrid; Mrs. M. Comber, Lympstone; Dr. A. J. Chalmers, Khartoum; Mr. J. Cabburn, Lond.
D.—Domestic Engineering Co., Lond.; Dental Association, Lond.; Dr. J. N. Dyson, Eastbourne; Dr. I. David, Colombo; Dr. W. F. Dearden, Manchester; E.—Mr. L. Emery, Leyland; Dr. Elliott, Portliver.
F.—Dr. J. D. Ferguson, Scarborough; Factories, Chief Inspector of Lond.
G.—Capt. J. Geoghegan, R.A.M.C.; Dr. W. R. Grove, St. Ives; Dr. H. L. Gordon, Lond.; General Medical Council, Lond., Registrar of.
H.—Mr. T. G. Hill, Lond.; Fleet-Surg. W. R. Home, R.N.; J.—Mr. F. Jenner, Boscombe; Mr. B. E. James, Lond.; Lt.-Col. A. L. Johnson, C.A.M.C.
K.—Dr. W. Kidd, Lond.; Rt. Hon. Lord Kinnaird, Lond.; King Edward's Hospital Fund for London, Hon. Secs. of; Dr. A. M. Kennedy, Glasgow; Mr. O. H. Kahn, Boston.
L.—Dr. R. B. Lord, Colwyn Bay; Major G. C. Low, Lond.; Local Government Board, Lond.
M.—Ministry of National Service, Lond., Sec. of; Dr. I. Moore, Lond.; Dr. J. C. McWalter, Lond.; Mrs. J. T. McRatire, Dublin; Lt.-Col. C. S. Myers, R.A.M.C.; Mr. G. Mayall, Bolton; Medical Research Committee, Lond.; Mr. J. Y. W. MacAlister, Lond.; Dr. R. Morton, Lond.
N.—Capt. H. L. O. Noel, R.A.M.C. P.—Mr. F. H. Porrycoote, Polperro; Mr. R. D. Popley, Lond.; Dr. A. Powell, Bombay.
R.—Royal Microscopical Society, Lond.; Royal Institution of Great Britain, Lond.; Mr. S. Rowntree, York; Royal Institute of Public Health, Lond.; R. S.; Dr. H. Rahmet Bey, Cairo; Mr. P. B. Roth, Lond.; Mr. H. M. Rainford, Lond.; Dr. Reynolds, Lond.; Dr. N. Raw, Lond.; Royal Society of Arts, Lond.
S.—Mrs. J. Simpson, Lond.; Sir G. H. Savage, Lond.; Dr. W. O. Swayne, Clifton; Sir Stewart Stockman, M.R.C.V.S., Lond.; Mr. B. Slopee, Lond.
T.—Mr. D. B. Thom, Aberdeen.
U.—University of Edinburgh, Sec. of.
W.—Capt. A. H. Watson; Mr. C. B. West, Lond.; Capt. A. Wyllie, R.A.M.C.; Major C. F. White, R.A.M.C.; Dr. P. P. Weber, Lond.; Mr. W. C. Whitworth, Scarrier; West London Medico-Chirurgical Society; Mr. A. Watkins, Hereford; Wallace Automatic Disinfecting and Deodorizing Co., Lond.; West London Hospital Post-Graduate College, Dean of.
Y.—Dr. R. A. Young, Lond.; Capt. F. W. B. Young, R.A.M.C.(T).

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. 1.
Tuesday, Jan. 14th.

GENERAL MEETING OF FELLOWS, at 5 p.m.

Discussion:

On "Conditions under which Pensioners of the Army, Navy, and Royal Air Force are Admitted into and Treated in Civil Hospitals," to be opened by Mr. H. J. Waring. Any Fellow wishing to take part in the Discussion should send his name to the Secretary as soon as possible.

MEETINGS OF SECTIONS.

Tuesday, Jan. 14th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 3.30 p.m.

CLINICAL MEETING at the Ewell War Hospital by courtesy of Lt.-Col. M. A. Collins, R.A.M.C., D.D.M.S. Eastern Command, and of the Committee, L.C.C.

Train leaves Waterloo at 2.37 p.m., arriving Ewell 3.10 and Epsom 3.15. Return train leaves Ewell at 5.59 p.m. for Waterloo.

Wednesday, Jan. 15th.

HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 p.m.

Papers:

Sir William Osler: A Bodley MS. of Lectures of Andrea Cesalpino, 1590.

Dr. Cumston: A Contribution to the History of the Surgical Treatment of Aneurysm, from notes of Dr. Charles Maunoir of Geneva, made in 1822.

Thursday, Jan. 16th.

DERMATOLOGY (Hon. Secretary—S. B. Dore): at 4.30 p.m.

Cases will be shown.

Friday, Jan. 17th.

OTOLOGY (Hon. Secretaries—J. F. O'Malley, H. Buckland Jones): at 5 p.m.

Paper:

Mr. Hugh E. Jones (President of the Section): Deafness associated with the Stigmata of Degeneration.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Robert Knox, Walter J. Turrell): at 8.30 p.m.

Adjourned Discussions on the following Papers:—

A Note on the Construction of the Diathermy Machine (with demonstration): by O. M. Dowse, B.Sc., and C. E. Iredell, M.D. Diathermy in Gynaecological Cases: by G. Bellingham Smith, F.R.C.S., C. E. Iredell, M.D., and A. E. Maraden, Surgeon, R.N. Personal Experiences of Burning due to Secondary Radiation: by James Metcalfe, M.D. Diathermy and Fulguration in Malignant Disease: by Philip Turner, F.R.C.S., Lt.-Col., R.A.M.C., and C. E. Iredell, M.D.

Papers:

Diathermy in Diseases of the Eye: by O. Meadows-Ryley, Surgeon, R.N., and C. E. Iredell, M.D. The Diathermy of the Abdomen: by C. E. Iredell, M.D., with a Note by W. H. Barber, M.D., Capata, R.A.M.C.

Dr. S. Gilbert Scott will show lantern slides of interesting cases.

CLINICAL

OBSTETRICS AND GYNAECOLOGY

SURGERY: Members of these Sections are specially invited to attend the Meeting of the Section of Electro-Therapeutics.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W. 1.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Jan. 17th.—5.30 p.m. Paper:—Lt.-Col. S. P. James, I.M.S. (ret'd.): Malaria in England.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 p.m., Wednesday, Friday and Saturday also at 10 a.m.

(Details of Post-Graduate Course were given in issue of Nov. 30th, 1918.)

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY, Jan. 14th.—5 p.m., Dr. W. K. Sibley: Ionisation.

WEDNESDAY.—5 p.m., Dr. W. Grimsby: Skin Diseases in the Army.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, Jan. 15th.—4 p.m., Prof. W. A. Bone: Coal and National Health.

THE King has conferred the Order of Merit on Lieutenant-Colonel R. R. Sleman, R.A.M.C.

CLASSES in the various faculties were resumed in the University of Lille on Jan. 3rd. The Faculty of Medicine in Brussels reopens its doors in the course of the month.

Appointments.

ALFORD, H. J., M.D. Lond., has been appointed Consulting Medical Officer of Health and School Medical Officer to the Taunton Town Council.
BULLOUGH, WILLIAM A., M.B., Ch.B., County Medical Officer of Health for Essex.
WILLIAMS, A. H., M.D. Edin., Commissioner of Medical Services for the North-West Region, which includes the whole of Lancashire and Cheshire.

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Bucks County Asylum.—Asst. M.O. £350.
Birmingham, St. Charles Hospital.—Res. M.O. £150.
Bath Royal United Hospital.—H.P. and H.S.
Bedford County Hospital.—Res. Clin. Asst. £2 2s. per week.
Bolingbroke Hospital, Wandsworth Comm., S.W.—Res. M.O. £200.
Bradford Royal Infirmary.—H.S.
Bristol General Hospital.—Sen. H.S. £300.
Chichester, Royal West Sussex Hospital.—H.S. £160.
Dorchester, Dorset County Asylum.—S. cond. Asst. M.O. £300.
Dudley County Borough.—M.O. H. and School M.O. £s. £175.
East Ham County Borough.—Female Asst. M.O. £400.
East London Hospital for Children and Dispensary for Women, Shadwell E.—Asst. Res. M.O. £125. Also Casualty Officer. £120.
Edinburgh, Venereal Diseases Scheme.—Female Asst. M.O. £400.
Exeter City Mental Hospital, Digby, near Exeter.—Asst. M.O. £300.
Gloucester County Asylum, Bridgford.—Temp. Asst. M.O. £8 6s. per wk.
Glasgow Central Hospital, Holloway-road, N.—H.S. £150.
Guildford, Royal Surrey County Hospital.—H.S. £250.
Hellingly, East Sussex County Asylum.—Temp. Asst. M.O. 7 gs. per wk.
Hull City Education Committee.—Asst. Female School M.O. £400.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. £300.
Manchester, Ancoats Hospital, Mill-street.—Hon. P.
Margate, Royal Sea-Bathing Hospital for Surgical Tuberculosis.—S. £200.
Monmouthshire County Council.—Female Asst. M.O. £400.
North Riding Asylum.—Locum Tenens M.O. 1 gs. per week.
Northampton County Borough.—Temp. Tuberc. Officer. £400.
Norwich, Norfolk and Norwich Hospital.—H.P. £250. Hon. P.
Painey Hospital, Lower Common, S.W.—Res. M.O. £150.
Queen's Hospital for Children, Hackney-road, E.—Temp. Asst. P's. £25.
Reading, Royal Berkshire Hospital.—Hon. P.
Rushdale Infirmary and Dispensary.—Jun. H.S. £100.
Rochester, St. Bartholomew's Hospital.—Clin. Asst. £150.
Rotherham Hospital.—Sen. H.S. £250.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P. £50. Casualty H.S. £100.
Surrey Education Committee.—School Dentist. £300.
Swansea Hospital.—Res. Senior Student. £150.
Swindon Borough.—Asst. M.O. £50.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. £200.
Westmorland Sanatorium, Meathop, Grange-over-Sands.—Asst. M.O. £50.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £185.
The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Knutsford, Folkestone, Blackburn, Preston, and Harrogate.

Births, Marriages, and Deaths.

BIRTHS.

GRATTAN-GUINNESS.—On Dec. 30th, 1918, at Madeley, Shropshire, the wife of Dr. A. P. Grattan-Guinness of a daughter.
MOYSE.—On Jan. 2nd, at Church Hill House, Stalbridge, Dorset, the wife of H. H. Moyse, M.R.C.S., L.R.C.P., of a daughter.

MARRIAGES.

OWEN-WEBB.—On Jan. 1st, at Haslemere, Captain Dennis Crile, B.A.M.O., Harvard Unit, to Mary Dorothea, elder daughter of Major and Mrs. H. N. Webb, of Walsby, Haslemere.
HALL-ROULEDGE.—On Jan. 1st, at St. John's, Holland road, W., Robin Hall, M.B., B.Ch., B.A., Captain, Royal Air Force, elder son of Dr. and Mrs. Robert Hall, of Belfast, to Geraldine Blais, only daughter of Mr. and Mrs. Gerald Edmund Routledge, of Kensington, W.
SWINER GRANT.—On Jan. 1st, at St. James's, Preston, Louis Bruce Swinger, Captain, R.A.F. Medical Service, to Maud, third daughter of Mr. and Mrs. John Grant, of Preston, Lancashire.

DEATHS.

ELLS.—On Jan. 2nd, in London, William Ashton Ellis, M.R.C.S., L.R.C.P.
HARRIS.—On Dec. 31st, 1918, at Leamington, in a Nursing Home, Stuart Harris, M.B., L.R.C.S. Edin., aged 80.
MACKINNON.—On Dec. 30th, 1918, at Alexandria, of pneumonia, Frank I. Mackinnon, M.B., C.M., M.R.C.S. (of Damascus), Captain, R.A.M.C. (temporary), aged 63.
N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

COLONIAL HEALTH REPORTS.

Ceylon.—It appears from the Blue-book for 1917 that the population at the end of that year was estimated at 4,632,400. This showed a net increase of nearly 85,000 over that of the previous year, and was made up of an excess of about 70,590 births over deaths, of 15,180 arrivals over departures of Indian coolies, and of a reduction of nearly 270 persons of the European population who left for war service. The following are details of the population:—

| Nationality. | No. | Percentage of total population. | Nationality. | No. | Percentage of total population. |
|---------------|-----------|---------------------------------|---------------|--------|---------------------------------|
| Sinhalese ... | 2,861,100 | 63.7 | Malays ... | 14,000 | 0.3 |
| Tamils ... | 1,338,100 | 28.9 | Europeans ... | 7,200 | 0.2 |
| Moors ... | 276,450 | 5.9 | Others ... | 18,000 | 0.4 |
| Bughaes ... | 28,780 | 0.6 | | | |

To every 100 males of the population there are 89 females. The birth-rate was 40.1 per 1000 of the population, and was 2.6 higher than the average of the preceding decennium. It was the second highest on record, being 0.9 below that of 1908, which was the highest. The proportion of male to female births was 104 to 100. The death-rate was 24.7 per 1000, the lowest recorded during the last 10 years. The proportion of male to female deaths was, like the proportion of births, 104 to 100. Of the total deaths registered during the year 28.2 per cent. were those of infants under 1 year of age, corresponding to a mortality-rate of 174 per 1000 births registered. This rate is 20 per 1000 below the average for the preceding decennium, and 10 per 1000 below that for 1916. The proportion of deaths in the general community from certain principal causes to a million of the estimated population was as follows: Infantile convulsions, 2814; diarrhoea, 2217; pneumonia, 1090; phthisis, 821; dysentery, 666; ankylostomiasis, 575; puerperal septicæmia, 401; premature birth and congenital defects, 349; malaria and malarial cachexia, 278; bronchitis, 189; cancer, 92; and enteric fever, 91. Plague, which broke out in Ceylon for the first time in 1914, is still continuing its scourge, having claimed as its victims in the year under review 211 persons, against 286 in 1916. Accidental drowning accounted for 95 deaths per million population, falls from trees for 83, and snake-bite for 46. 240 deaths (including 2 Europeans) resulted from suicide, homicide accounted for 183, and 38 were due to judicial hanging. That the reduction in the number of plague cases during 1917 was in no way due to the virulence of the infection having abated is indicated by the steady rise in the case mortality, which was 92.2 per cent. in 1914, 92.8 in 1915, 93.8 in 1916, and 94.7 in 1917. As hitherto, the largest number of cases occurred amongst young adults, males being attacked more frequently than females. The disease was, as usual, almost entirely confined to the occupants of insanitary tenements. Out of a total of 23,382 rats examined bacteriologically, only 70, or 0.3 per cent., were infected, by far the largest number being found in an area which is the chief centre of the petty trade in grain. It is of special interest to record that three out of six cats examined were found to be heavily infected. The same preventive measures as hitherto were carried out, reliance being placed chiefly upon isolation of patients in hospital, segregation of contacts, evacuation and closure of insanitary tenements in infected localities pending the carrying out of structural improvements by the owners, pestering of infected and adjacent houses, sulphur fumigation of rat tunnels, capture and poisoning of rats. The campaign against ankylostomiasis, which is extremely prevalent in practically every part of the island, was carried on throughout the year by officers of the International Health Commission, whose work is much appreciated, in conjunction with the medical department. There are 84 Government hospitals and 441 Government outdoor dispensaries. The owners of private estates have provided 58 estate hospitals and 401 dispensaries. Three new hospitals were opened during the year and several others are under construction. The lunatic asylum contained on Dec. 31st, 1917, 1030 inmates. The leper asylum, situated six miles from Colombo, contained 429 patients at the end of the year. A smaller establishment for lepers exists at Kalmunai, in the Eastern Province, with accommodation for 30, and a leper colony at Mantivu, a small island on the lagoon in the neighbourhood of Batticaloa, is being erected. A Home for Incurables (containing 80 beds) is administered by a committee of Government officials and representatives of the public. The general rebuilding scheme in contemplation for the improvement of the Medical College was deferred owing to the war. The full course of training for medical

students is five years. A diploma in medicine, surgery, and midwifery (which can be registered in the United Kingdom), is granted to successful medical students. A two years' course of training is provided for apothecaries, who, on becoming qualified, are employed by Government. The attendances during 1916 and 1917 totalled—medical, 620; apothecary, 253: the passes were—medical, 30; apothecary, 30. In Colombo there are a bacteriological institute, a general hospital, an ophthalmic hospital, a lying-in home, a hospital for women and children, and one for infectious diseases. There is an establishment for the manufacture of calf lymph, and at Kandy and Galle there are special dispensaries for the treatment of eye diseases. An antituberculosis institute in Colombo was opened during the year, fitted with an up-to-date X ray apparatus. A start was also made in connexion with the provision of a Pasteur Institute in Colombo.

ELECTROLYTIC DISINFECTANT IN INFLUENZA.

IN view of the Memorandum on Epidemic Influenza which has been issued by the Royal College of Physicians of London (THE LANCET, Nov. 16th, 1918), in which, as a preventive, is recommended gargling the throat with 20 drops of solution of chlorinated soda in a tumbler of warm water and sniffing up the nose a solution of common salt, Mr. F. W. Alexander, medical officer of health of Poplar, sends us an account of the method adopted in that borough for dealing with the outbreak. The drawbacks to using chlorinated soda on a large scale are that it is difficult to make and has to be freshly prepared. The electrolytic fluid as made in Poplar contains common salt and hypochlorite of magnesium (a solution of chlorinated magnesium), it is alkaline and stable, and if it is necessary to give it a tint permanganate of potash may be used for the purpose, as it retains its colour when added to the solution. During the first three weeks of November 5370 gallons were distributed free in the borough, the cost, including that of electricity and materials, being 1d. per gallon (or about £12 per 5370 gallons). This fluid has been available free in Poplar for the last 12 years, and as soon as influenza broke out in the borough handbills were distributed and the district posted with bills instructing the inhabitants to rinse the mouth, gargle the throat, and douche the inside of the nose with the council's electrolytic disinfectant, which could be procured free at one of the council's seven distributing depôts. Mr. Alexander points out the advantages of installing plants for making the fluid, especially on ships and at seaside towns, where the electrolyte is always at hand and always ready. It could be used immediately in outbreaks of diphtheria and cerebro-spinal fever.

OIL OF CHENOPODIUM FOR ANKYLOSTOMIASIS.

IN the Colonial Health Report from Ceylon, which we notice on page 89, the extreme prevalence of ankylostomiasis in that island is noted. A note in the current number of the *Colonial Journal* quotes a report from the Fiji Islands stating that the employment of the oil of chenopodium, or American wormseed oil, is constantly increasing there. The reasons given for the use of this drug are that it is less toxic, more efficient, less costly, and has a greater effect upon the ascarides associated with hookworms than thymol. Failure to obtain good results with the oil of chenopodium is claimed to be due to small dosage, the correct amount being as follows: Over 60 years of age, 20 m or 40 drops; 21 to 60 years, 30 m or 60 drops; 11 to 20 years, 20 m or 40 drops; under 10 years, 3 drops for each year of age; pregnant women, 18 drops. The doses are divided into two equal parts, one to be given at 7 A.M. and the other at 9 A.M., these being preceded by a dose of well-diluted magnesium sulphate on the afternoon of the day before treatment with the oil is begun. Two hours after the last dose of oil a second dose of the salts solution is given. A report based on the first 1000 cures occurring in Fiji states that of those receiving two treatments 70 per cent. or more are cured. In a few selected parts where the people were obedient to advice in regard to diet the cures after two treatments reached 85 per cent. Of the 1000 cures obtained in the first three months of active work, 801 occurred after two treatments, 184 after four treatments, and the remaining 15 cures after five treatments. No untoward results have been reported from the use of the drug.

HEALTH TEACHING.

THE importance of right training in hygiene, especially at school age when the future citizen is under control for training, was admirably discussed in his first Milroy lecture last year by Professor H. R. Kenwood and reported in THE LANCET of May 11th. In this connexion the health and temperance syllabus drawn up for the Natal Education Department by its medical officer, Dr. A. B. MacArthur Thomson, for the instruction of hygiene in elementary schools, is of interest, for it is a genuine attempt to introduce

practical instruction in place of a pseudo-scientific method of teaching. The syllabus is graded to suit the various Standards I. to VI., and includes, in addition to the usual subjects of food, air, and cleanliness, instruction in first-aid. In Standard V. reproduction is discussed by means of vegetable physiology, the study and development of the chick taking its place in Standard VI. The great feature of the syllabus is the application of the lessons where possible by means of inspections, drills, and parades, the senior standard studying the seasonal prevalence of disease in environment, and making visits to museums to view appropriate models. Senior health monitors are also appointed to report on the sanitation of the school grounds. Precept and practice thus go hand-in-hand. Another commendable feature of the scheme is the telling of stories dealing in a general way with the triumphs of hygiene, such, for instance, as the construction of the Panama Canal.

THE METROPOLITAN WATER-SUPPLY DURING JULY, AUGUST, AND SEPTEMBER, 1918.

ALTHOUGH the mean rainfall during the month of July at 12 stations which have been selected as giving equal representation for all parts of the Thames Basin was 2.06 inches above the average mean rainfall for that month during the previous 35 years, the raw river waters showed an improvement in quality judged by chemical examination, but all three raw waters (Thames, Lee, and New River) contained more bacteria than their respective averages for the year 1917. The filtered waters likewise improved in chemical respects, while bacteriological examination yielded, generally speaking, not unsatisfactory results. There were no typical *B. coli* found in 75.3, 43.5, and 74.8 per cent. of the filtered water samples derived from the Thames, Lee, and New River water respectively, even when 100 c.cm. were examined. In August, on the other hand, the rainfall was 1.47 inch, being 1.17 of an inch below the average mean rainfall for that month during the previous 35 years. Though in some particulars not maintaining the chemical quality of the previous month, all three raw river waters yielded results better than their respective averages in 1917, and the same condition is recorded as regards the filtered waters, except that the colour showed less satisfactory results in the case of the New River and Lambeth supplies. There were more bacteria present in the raw water from the Thames and Lee than in 1917, but the bacteriological results of the filtered waters were satisfactory. September was a relatively wet month, the rainfall being 5.86 inches, which is 3.91 inches above the mean average rainfall for that month during the previous 35 years. All three raw waters showed, generally speaking, a deterioration in quality according to chemical examination, but the filtered waters maintained their quality on the whole. The Lee and New River raw waters contained more bacteria than their respective averages for the year 1917, but raw Thames water contained fewer compared with the same period. All filtered waters as they reach the consumer gave satisfactory bacteriological results.

THE "ARELLANO" INFLUENZA MASK.

PARTICULARS are given in our advertisement columns this week of the "Arellano" influenza mask, named after its designer and made by Messrs. John Bell, Hills, and Lucas, Ltd., who were so successful as manufacturers of the poison-gas respirators used in the field by H.M. forces. The Arellano mask has been approved by medical men for its purpose, and will be placed immediately, in large quantities and at a low price, on the market. Our readers know that the use of masks has been suggested as a precaution in more than one quarter during the recent epidemic of influenza.

KHAKI MONOTONY.

"A wearer of khaki," a medical man, who "craves for a little colour" and who believes that "bright colours cheer us on our way through life," calls our attention to the monotony and sombre hue of khaki, and thinks that after more than four years of war the prevalence of this dim tint has a malign influence. There can be no doubt as to the influence of colour on the mind of the savage and of the sophisticated, though the psychological effects may differ in depth and quality, but whether it would really dispel any existing depression caused by the war if, when public and State ceremonials call for military escorts and processions, the soldier appeared in full dress uniform we are not so sure as our correspondent. Probably there are plenty of uniforms stored away which could become available at short notice, so that the authorities could comply with the suggestion without much public expense, but we are not convinced of the utility of doing so. With regard to military displays, and it is to these that our correspondent specially refers, it should be remembered that for the men taking part in them full dress uniform is not the most comfortable in which to remain often for long hours and perhaps with inadequate opportunities for food.

The Examination

OF THE

VERMIFORM APPENDIX BY X RAYS.

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I.—INTRODUCTION AND HISTORY.

IN examinations of the human alimentary tract by means of a meal opaque to the X rays, the appearance of the vermiform appendix on the fluorescent screen or photographic plate has been until lately infrequent and uncertain. Although there is already a large literature of the radiology of the alimentary tract, references to the appendix are, as would be expected, scanty.

Béclère, in 1909, showed a radiogram of the appendix, which had been taken at the end of 1906, with a five minutes' exposure. In 1910 Lieritz, and in 1911 H. D. Reid, reported a similar observation. In 1911 Grigorieff communicated to a congress of physicians in Moscow that he had seen the appendix fill with opaque material, move, and empty itself; and stated that with suitable methods it would fill in all cases in which its lumen was in free communication with the cæcum. M. Cohn, who reported observations of his own in 1913, and from whose paper we quote the Moscow communication, thought that Grigorieff's powers of vision were uncanny; but the description given was accurate enough, and can now be confirmed daily. In the same year (1911) A. C. Jordan had observed that a little bismuth entered the appendix in a good many cases.

In 1913 the work of J. T. Case called the attention of A. W. George and I. Gerber to the appendix. These workers, using an opaque meal of barium sulphate suspended in buttermilk, claimed that the appendix could be seen in 70 per cent. of the patients examined, and published photographs. In 1914 A. F. Hurst expressed the opinion that the appendix was visible on the screen, more or less, in half the cases examined, recording two cases of diseased appendices which had been recognised with the X rays, and Rieder advocated a more thorough examination of the appendix. Case (1914) saw the appendix in one-third of a series of 763 cases and published good photographs, but at that time it was thought probable that the appendix was or had been diseased if the contents of the cæcum were seen within it. In 1915, Imboden published 17 photographs of which 7 were probably normal, and expressed the opinion that the demonstration of the appendix was no evidence of disease; and in the same year George, writing this time with Leonard, published good photographs of diseased appendices. Quimby (1913) and Eisen (1915) have also published instructive papers with photographs. Carman and Miller, of the Mayo Clinic, show a few photographs of appendices in their recent excellent work. They speak doubtfully, however, of the value of direct X ray examination of the appendix.

George and Leonard, claimed that with a meal of 90 g. of bismuth, or equivalent of barium sulphate, and one pint of buttermilk the appendix, whether healthy or diseased, unless its lumen be obliterated, can be demonstrated in every instance. Such a claim cannot, of course, be made good, as, short of operation, there is no control means of knowing whether the lumen is obliterated or not. Our observations in the last two and a half years nevertheless enable us to support the view that the opaque meal they use, of barium sulphate and buttermilk, is of great value in the X ray examination of the appendix. With a meal of bread and milk, or porridge, and bismuth oxychloride or barium sulphate, the appendix was often looked for but seldom seen. With buttermilk and barium we now see it in the majority of cases.

II.—METHOD.

We use a rather smaller meal than George and Leonard.

In all cases we have given the same quantity of buttermilk, 3/4 of a pint (425 c.cm.). The amount of barium is varied according to the build of the subject. With a thick body 150 g. is stirred in; with thinner folk less is used. The meal is not so viscid as a standard meal of bread and milk, and holds the barium in suspension better than milk alone. George and Leonard state that cereal mixtures do not readily enter the appendix. Perhaps the absence of milk fat in their meal is also an advantage, or the acidity. The taste of the buttermilk is unpleasant to some, but now that it is

clear that the appendix can be demonstrated more palatable mixtures will be sought, and probably found. As regards the examination of the rest of the alimentary canal, we have not found any disadvantage in the use of the buttermilk mixture, but the reverse. For œsophageal lesions a more solid meal would naturally be given. The normal rate of passage of the buttermilk meal through the body is about 12 to 24 hours less than that of a meal of porridge and barium.

An opaque enema has not proved, either in the experience of others or ourselves, to fill the appendix so often as an opaque meal.

We found over three years ago that the appendix is more frequently seen when the bowel has been emptied by castor oil given 36 hours before the opaque meal.

The manner of examination is, of course, of great importance, as well as the kind of meal and the previous emptying of the bowel, for a careful search and suitable manipulation will often reveal the appendix when it would otherwise have been missed. We would lay stress on the following points:—

1. Careful screening with manipulation is needed to find the appendix, also to observe its mobility and the presence or absence of active movements or of tenderness, that is, pain on direct pressure.

2. Photographs must be taken in all cases: we take frequently half a dozen or more of the same appendix. The chief features which help a decision as to whether the appendix is healthy or diseased can only be observed adequately on the photographic plates. These features are—the filling and emptying of the appendix, its position and its outline.

3. The best views are obtained as a rule when the patient is lying down, usually supine; occasionally the semi-lateral position is required, rarely the prone.

4. The gloved hand is used at first in ascertaining the lie of the parts; for the final movements, the wooden spoon is used because it is not opaque to the rays and a plate can be exposed so soon as the appendix is brought into the field.

5. The ileum and cæcum are drawn aside carefully in different positions so as to get a view of the whole appendix whenever possible. A better contrast is obtained if the appendix can be moved over a part of the bowel which contains air before the photograph is taken.

6. When the cæcum lies in the pelvis the appendix can often be shown, but, generally speaking, its mobility cannot be tested. It is possible, however, in most cases to move the cæcum into the iliac fossa by the following procedure. The patient lies on the right side and takes half a dozen deep breaths, then turns semi-prone on the right, still breathing fully; he then moves on to his back and the abdomen is stroked deeply from the symphysis pubis to the right iliac crest. Another means of moving the cæcum out of the pelvis is to distend the rectum with air, the patient lying on the right side; we have used this method, but have generally found it unnecessary.

7. If the appendix lie behind the cæcum it can often be shown by taking an oblique view or by moving the cæcum to one side.

8. It is an advantage if the end of the ileum and the appendix can be shown filled at the same time. Should there be opaque material in the ileum, but not in the terminal part, it will often be moved on into the terminal part if a drink of hot water be given, provided there is no obstruction to prevent the hot water leaving the pylorus. The patient should turn on to the right side.

9. When there is pain, tenderness, or inflammation movements and manipulations must not be made, or only made with great care.

10. A 2 mm. aluminium screen is interposed for both screening and plate exposures, using a Coolidge tube.

11. In doubtful cases where the appendix fills in part only, or empties before it has completely filled, a succession of buttermilk meals at breakfast, lunch, and tea-time may fill it. The usual amount of barium is divided between the three meals.

The value of (i.) the special meal and (ii.) practice is illustrated by the following experience. The first 100 cases in which we observed the passage of an opaque meal through the alimentary canal are left out of account, as the ileo-cæcal region was not examined with such care as is now given it. In the next 200 cases we saw the appendix clearly in a few. Many of these were prepared with castor oil. We then began to use the barium and buttermilk meal after preparation by castor oil. In the next 100 cases the appendix was seen 24 times, in the following 100 cases 35 times, then 54 times, then 72 times, and in the last, and eighth, 100 cases 86 times.

Observations.—We have now photographs of about 300 appendices, seen in the whole or a part of their length. In

many no evidence of disease was found in the appendix or in its neighbourhood; it was in such that the observations described in Section III. below were made. Others were diseased or in close relationship to diseased organs; these are described in Section IV.

III.—THE NORMAL APPENDIX.

Previous observers, especially George and Gerber, George and Leonard, and Case, have noted that in health the shadow may vary in width from $\frac{1}{4}$ inch down to a thread (Figs. 1, 6, 9, 11, and 12) or a row of dots (Fig. 3); that the lumen may be seen to fill and empty several times, especially in young people; and that it empties finally at the same time as the cæcum. George and Leonard state that it is best seen in the plates taken at 6 hours and at 24 hours after the ingestion of the meal.

As the appendix is often diseased, care is needed before it can be concluded that the appearances seen are not pathological. Clear evidence must be obtained of natural position, mobility, and outline of the appendix and surrounding parts; of a natural rate of filling and emptying of the ileum and cæcum; of the absence of tenderness to direct pressure; and of pain or any symptom suggestive of appendical disease. The mobility of the appendix, so far as it is not limited by its short mesentery, and the absence of tenderness on pressure, cannot usually be determined when the cæcum lies in the pelvis, unless it is, as above mentioned, manoeuvred into the iliac fossa. The distal part of the appendix should be movable within the limits of its attachments, and the whole should move freely with the cæcum. The outline of the healthy appendix should show no constant irregularities.

According to our observations the appendix begins to fill soon after material has entered the cæcum—that is, about 3 to 4 hours after the meal has been taken. It may fill in a few minutes from end to end. Frequently, however, the filling is quite slow and is not observed in process; also it may not take place for some hours after the cæcum and ascending colon are filled. In some cases, with rapid filling, the material entering appears of the same breadth throughout (Figs. 10, 11, and 12), as if it were forced in by higher pressure in the cæcum, and occasionally material may be seen to pass along the lumen when the cæcum is pressed gently. In others temporary constrictions can be seen (Figs. 2, 5, and 8.) We have not actually seen a wave of constriction passing isolated pieces of opaque material from the base towards the apex of the normal appendix, but we have seen material lying loosely in the middle occupy the tip three seconds later, its tail showing a tapered appearance, apparently as a result of a contraction of the appendix, the basal part near the cæcum remaining tightly constricted. In some pathological cases, with over-activity, a definite wave can be seen to propel material from base to apex of the appendix. In such we have observed a block of material moving towards the apex, showing a round head towards the tip and tailed off towards the base where the wave of constriction was grasping it.

Sometimes the appendix can be seen to fill and empty repeatedly during a single screening within a few seconds. This has been most definite in young people; for example, in two subjects aged 16 and 9 respectively (Fig. 5 was taken from one of them). Or it may fill and empty at a slower rate several times in the course of a few hours.

The width of the lumen varies considerably in different appendices and in the same individual; it is usually fully relaxed after fresh material has entered, and becomes constricted later. (See Figs. 31 and 32 taken at an interval of 20 seconds). It bears no proportion to the size of the cæcum and ascending colon. It is usually narrowest at the base—i.e., near the cæcum. (Figs. 6 and 8.)

The time at which the best view is obtained is usually about 12 to 14 hours after the opaque meal, but there is much variation in this respect.

The appendix commonly remains filled until the cæcum is clear, when its contents are discharged. The density of the appendical shadow lessens as the cæcum empties (Fig. 10). In some cases in which there is no evidence of disease the contents remain longer—e.g., until the ascending colon is clear. If there is further delay we regard the appendix as sluggish. The appendix empties itself by waves of contraction which we have seen pass from the tip to the base, propelling material into the cæcum. It may empty while the cæcum is still filled.

In some cases the tip can be seen to wave about actively with a serpent-like motion (Figs. 7 and 8), presumably from contractions of its wall, or from the passing in of material from the cæcum. Such movement of the middle part has also been observed repeatedly at the same time as food was passing from the ileum into the cæcum.

It has been stated that the appendix tends to become gradually obliterated with age. This is not, however, a

necessary accompaniment of advancing years, for in one of our subjects, aged 74 years, in whom the alimentary canal appeared to be healthy in all respects, the diameter of the shadow was greater than that in many young people. (Fig. 10.)

In one patient, in whom the appendix was found healthy, on re-examination 18 months afterwards two pellets of shot were seen within it and could be moved about (Figs. 11 and 12.) They gave rise to no symptoms, but the appendix emptied itself more slowly than before, containing some barium 24 hours longer than the cæcum. The abdomen was screened weekly and three weeks later the pellets had gone. A similar occurrence was recorded by G. H. Orton in 1907, but the appearances were not so distinct, the nature of the foreign bodies casting the shadow being discovered at an operation. The appendix appeared healthy.

IV.—THE DISEASED APPENDIX.

In most cases of acute appendicitis the patient is not fit to be X rayed; neither is such a method of diagnosis needed.

In the diagnosis of chronic appendicitis we have found direct X ray examination of the appendix of great value, not only in cases in which suspicion had been cast upon that organ, but especially in the subjects of vague abdominal symptoms of unknown cause; in many such it has been possible either to demonstrate a normal appendix or to show that it was or had been the seat of disease.

The direct observation of the appendix is only a small part of the complete examination of the alimentary tract, and in many cases in which a suspected appendix has been found normal an explanation of the symptoms is furnished by lesions or disorders discovered elsewhere in the course of the examination. Every part of the stomach and bowel must, of course, be observed carefully. Further, it must be emphasised that all such methods of investigation are supplementary to a thorough clinical inquiry. Indispensable as the laboratory is for the medicine of to-day, it can never replace accurate and exhaustive examination at the bedside.

We have not been situated especially favourably for the observation of cases of chronic appendicitis, as Duff House is for medical cases, and no patient is sent there who is known to be the subject of that complaint. Our cases are therefore of two classes: (1) those in whom the symptoms of chronic appendicitis have not been definite; and (2) patients sent by doctors in the neighbourhood. The latter class is small in numbers, but has the advantage that one of us has frequently been able to be present at the subsequent operation.

In 36 cases we have details of operative findings, and upon these this section is mainly founded. A summary of each is given. Our opinions and conclusions are founded also upon the examination of other cases. We have in all, as stated in Section II., photographs of 300 appendices with a clinical history of each patient.

It is sometimes possible to make a diagnosis of chronic appendicitis from X ray findings in the ileo-cæcal region other than direct observations of the appendix. Such findings as adhesions of parts, ileal stasis, insufficiency of the ileo-cæcal valve, and spasticity of the colon have been put forward as affording contributory evidence of appendicitis. Adhesions about the appendical region are, of course, suggestive of former inflammation. Ileal stasis is an uncertain guide.* It was present in 21 out of 35 cases operated upon; also in cases in which the appendix had been removed. Eisen states that ileal stasis and regurgitation are as frequent in normal cases as in those of appendicitis. To insufficiency of the ileo-cæcal valve and spasticity of the colon we do not attach importance in this connexion. Examination of the appendix itself with the buttermilk meal gives more valuable information in most cases than can be derived from observations on surrounding parts made with those opaque meals which enter the appendix less often.

In the direct examination of the appendix the points to which attention must be paid are: (1) the filling or emptying of the appendix—delay or stasis; (2) shape—constriction.

* Ileal stasis has been said to be present if the terminal ileum is not empty nine hours after the opaque meal. Such a definition can only apply if the stomach is empty in a normal time, for the ileum cannot discharge its contents promptly unless it receives them promptly from the stomach. This fact has sometimes been overlooked and ileal stasis has even been depicted in the literature by a photograph in which opaque material can still be seen in the stomach. As a working definition we speak of ileal stasis or delay if the terminal ileum contains opaque material more than four hours after the stomach is empty.

tion and dilatation; (3) faecal concretions—vacuoles; (4) mobility; (5) hyperactivity—spasm; (6) tenderness; (7) position. These features are placed in the order of their value in a series of cases. In individuals any one feature may be of chief importance.

1. The Filling and Emptying: Delay or Stasis.

The appendix may not admit any barium, or not enough to cast a shadow, either because it already contains inopaque material or because it is obstructed or obliterated. The first is but seldom the case when the bowel has been purged with castor oil. Constriction near the base or obliteration will, of course, account for some of the cases in which the appendix is not seen. (Cases 29 and 30.) The fact that with increasing practice more and more appendices are visible shows that an impervious lumen is much less common than was thought. But we do not think it justifiable in the present state of our knowledge to conclude that an appendix is abnormal because it does not fill; though we should naturally regard it with suspicion, as it is unusual to fail to demonstrate the appendix in a person thought to be normal, especially if a second examination be made with three small buttermilk and barium meals, as described above.

Most frequently in chronic appendicitis the appendix fills in part (Figs. 13, 16, and 18), the passage of barium into the distal part being blocked, sometimes by obliteration (Fig. 20 and coloured drawing, Case 8), or constriction or kinking (Fig. 17), but generally by stagnant inopaque material (Figs. 13, 16, and 18) which the appendix has been unable to expel owing to limitation of movement by inflammation or its results. Sometimes the barium mixes with this material, forming a fainter shadow.

Such interference with the muscular activity of the appendix wall also prevents the punctual discharge of the barium which has entered, so that instead of the appendix emptying at about the same time as the cæcum it retains its contents 12, 24, or more hours longer. We have seen barium remaining for 26 days, and it has been known to remain for several weeks. Sometimes a blob of material also remains in the adjoining part of the cæcum, which forms a sort of antechamber to the appendix.

In cases of moderate appendical stasis without any other abnormal feature such as irregularity of outline, uneven filling, immobility or tenderness, we have not recommended excision; though an appendix showing prolonged stasis is one in which faecal concretions would be likely to form. If the shadow is very fine and the appendix rigid there is probably a fibrous atrophy.

2. Shape: Constrictions and Dilatations.

Irregularity in the outline of the shadow, is, next to uneven filling, the commonest sign of diseased appendix. Care must be taken, by repeating the photographs, to see that the irregularities are persistent and are not due to normal waves of contraction. Many forms of dilatation and constriction are illustrated in Figs. 13, 17, 19, 21, and 22, and in the coloured illustrations.

3. Faecal Concretions; Vacuoles.

Concretions of long-standing become infiltrated with lime salts and cast a shadow which may be seen independently of an opaque meal (Fig. 14). Such a shadow may be confounded with calculi in the urinary tract. It is usually a symmetrical oval which may help to distinguish it from the shadows of calcareous glands and phleboliths. The lumen proximal to an old concretion is often bent into a sharp hook; indeed, a hook-shaped end to the appendical shadow, as in Figs. 14, 18, and 22, should suggest the possibility of a concretion.

More recent concretions, which cast no shadows of their own, may block entirely the passage of barium, in which case they cannot be recognised, though they may be suspected in appendices of irregular outline which fill in part only and show a hook. In Figs. 16 and 18, for example, such concretions lay in the distal part of the appendix which did not show in the photographs. In many cases the barium passes round a soft concretion, which then gives the appearance of a vacuole (Figs. 13, 17, and 18). There may be more than one of these abrupt or gradual widenings of the lumen, which are constant in different photographs, alternating with narrow places. In other cases the barium extends around the proximal part only of the concretion, giving a V- or cup-shaped shadow as in Fig. 13.

4. Mobility.

If the appendix cannot be moved about within the limits of its attachments adhesions are suspected, but if the cæcum and appendix lie in the pelvis this sign cannot, as a rule, be established unless they can be brought into the iliac fossa. Adhesion of the appendix to other parts of the digestive tube can often be shown by manipulation, the adherent parts moving together. Thus the appendix shown in Fig. 23 (Case 12) could not be moved away from the cæcum. It is most often adherent to the iliac fossa, the ileum, the cæcum, or in the pelvis. In Case 2 (Fig. 14) the ragged outline of the ascending colon where the appendix appeared fixed confirmed the suspicion. The appendix may fill with barium, even when it is bound down for the whole of its length, as in Case 17 (Fig. 26), where inflammatory membranes covered the appendix and cæcum and constricted the ileum.

Sharp kinks must be noted carefully, but it is important to take several photographs, for what appears to be a kink in one may prove to be a rounded curve when viewed from another aspect. (See Case 15, Figs. 27 and 28.)

5. Hyperactivity: Spasm.

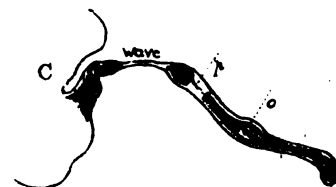
The normal filling and emptying movements of the appendix, which in the young are, like the mass movements of the colon, often vigorous and rapid, may be aggravated in older people by acute and subacute inflammation in those parts of the appendix in which gross changes have not taken place. In chronically inflamed appendices containing a fixed faecal mass offering resistance to free progress we have observed vigorous waves travelling from the cæcum towards the tip (Fig. 30), but not in the reverse direction, even when barium lay distal to the obstruction. Such hyperactivity was observed in Cases 1 and 14. Figs. 16 and 30 are photographs of appendices during contractions. The drawing here shown was made from an inflamed appendix which showed vigorous contractions apexwards proximal to an obstruction.

Such pathological hyperactivity differs from the normal activity in that it is often continuous for hours during the filling period; we have even seen it still going on at 24 and 36 hours. Whereas the normal movements are only seen, through the good luck, so to speak, of happening to observe the appendix at the right moment. The block of material in the normal appendix also shows as a rule a symmetrical tapering each end, which can be seen in Figs. 2 and 5.

Another characteristic appearance of the inflamed appendix is that of spasm. A particular part remains constricted for a considerable time, the blocks of opaque material being cut off abruptly (Figs. 15, 25, and 33), whereas when they are being moved on by waves of contraction they have tailed or rounded ends (Figs. 16 and 30). Slight or varying dilatation of the lumen is nearly always present also. When concretions are present there is generally no spasm. A very small lesion may cause spasm and impair the rate of emptying. In one case there was spasm at a place where a spray of purple spots in a mucous crevice was afterwards found.†

6. Tenderness.

Tenderness or pain on direct pressure over the appendix shadow may be a valuable and unequivocal sign of inflammation. An enlarged part of an appendix is frequently, though by no means always, painful on direct pressure. But, taken alone, tenderness is of less uniform significance than might be expected. It is not safe to make a diagnosis of appendicitis from tenderness in the absence of the more important signs above mentioned. If direct though gentle pressure is made upon the base of the appendix pain is often felt,



C. Cecum. o. Obstruction. p. Trail of preceding wave of constriction. wave. Abrupt and complete obliteration of the lumen by wave of constriction starting at the vestibule propelling block of material before it.

† In order to avoid confusion between inflammation and trauma the surgeon should take the mesenteric tissue into the forceps during removal, and not the appendix itself.

DETAILS OF 36 CASES IN WHICH THE RADIOGRAPHIC AND OPERATIVE FINDINGS HAVE BEEN COMPARED;
AND INDEX TO FIGURES OF DISEASED APPENDICES.

| Case. | Clinical summary. | X ray. | Operation. |
|-------------|--|---|---|
| 1 (554) | Male, aged 20; had suffered for years from intermittent pyrexia, constipation, diarrhoea, and abdominal pain. Pyrexia had been ascribed to phthisis, evidence of which years before; appendix had not been suspected. | <i>Fig. 15.</i> —9 hours after opaque meal. Appendix lies horizontally, across irregular shadows from ileum, tip near umbilicus. Proximal part filled and showed vigorous contractions. Shadow beyond formed dilatation with irregular cupped or V appearance, due to barium reaching round sides of a faecal mass. This part and base were tender. An hour later proximal part was contracted. At 24 hours all material except a coating had passed from bowel, but not from appendix. At 48 hours still barium in appendix and in adjoining part of caecum. (See also <i>Fig. 13 A.</i>) | Two inflamed enlargements of appendix. (See coloured drawing I.) Barium had reached to first one; acute bend beyond and large bulbous end not shown on plate. First enlargement contained soft solid matter, terminal one hard faecal mass. No appearances of tuberculoles in appendix or surrounding peritoneum. |
| 2 (596) | Male, 36. Flatulence, heartburn, wasting, weakness. 6 years' history; worse last 2½ years. Had been X rayed repeatedly; treated for dilated stomach; advised to have large intestine removed. Appendix not suspected. | <i>Fig. 14.</i> —8 hours after opaque meal. Caecum lies in pelvis. Shadow of material in caecum and ascending colon is interrupted at brim of pelvis. Appendix lay upwards, partly behind ascending colon. Proximal part appears natural. Distal part was large till near end, where narrow curved constriction can be seen, ending at oval concretion; this could not be moved from ascending colon, which had here ragged outline, ascribed to adhesions. (See explanatory diagram.) | Position as shown in photograph. Complete narrow mesentery, loop seen being due to shortening at one part. Appendix somewhat dilated beyond bend; after dilatation there was fibrous constriction and large concretion beyond. Wall enclosing concretion adherent to ascending colon. (See coloured drawing II. Drawing is less than natural size.) |
| 3 (615) | Female, 32. Pain in umbilical region on much exertion; easily tired; bowels irregular. X ray evidence of former phthisis. Appendix had not been suspected. | <i>Fig. 15.</i> —13 hours after opaque meal. Appendix lay upwards behind caecum; it appeared large and somewhat irregular, and showed spasm at all stages. Tip did not fill. | Middle of appendix enlarged, blue and inflamed, tip fibrous. (See coloured drawing III.) |
| 4 (658) | Female, 31. Flatulence, headaches, bad taste; several years' history | <i>Fig. 16.</i> —10 hours after opaque meal. Shadow shown spreading out into dilatation of appendix. Opaque material not seen beyond inflamed area. At 24 hours caecum lay in the pelvis. Appendix is still irregularly filled. It lay upwards; tip bent and could not be moved about; except that the proximal part could be moved as a whole with caecum. In same position at 10, 24, and 36 hours; was tender. No ileal stasis. | Appendix narrowed near base and bent and anchored by short mesentery. Beyond this dilated and congested. (See coloured drawing IV.) |
| 5 | Female, 13. Repeated attacks of severe pain in right iliac fossa. | <i>Fig. 17.</i> —36 hours after opaque meal. Appendix filled imperfectly; kinked, irregular in outline, bulbous tip, tender. Middle part gave faint diffuse shadow such as is seen when opaque material mixes with inopaque. Caecum filled irregularly; no definite notches at any stage; ileal terminal was not seen evenly filled. No ileal stasis. (See explanatory diagram.) | A pericecal membrane. Appendix enlarged, kinked, inflamed; concretions at end, one solid. (See coloured drawing V.) |
| 6 (684) | Male, 44. Indigestion on and off over 25 years. 24 years ago short attack abdominal pain and pyrexia; may have been appendical. On active service in France 3 years, including retreat. Worse last few months. Hyperacidity. | <i>Fig. 18.</i> —36 hours after opaque meal. Caecum lay in usual position of hepatic flexure. "Ascending" colon descended from it in front; then turned to left to become transverse colon. Appendix did not fill well; seen above caecum curled upwards and to right. Bulbous; had hook appearance often seen proximal to concretion. Much delay, material still in appendix at 140 hours. Rest of bowel clear at 72 hours. Kinking of ileum with stasis. | Caecum and ascending colon had each a mesentery. Caecum lay high in loin, ascending colon depending from it in front. Appendix long, congested, bulbous, and contained concretions. (See coloured drawing VI.) |
| 7 | Male, 45. Symptoms of hyperacid indigestion for years. | <i>Fig. 19.</i> —8 hours after opaque meal. Outline of appendix irregular. X ray evidence of duodenal lesion. No ileal stasis. (See also <i>Fig. 19 A.</i>) | Appendix bulbous, adherent, contained concretions. (See coloured drawing VII.) Ulceration or cicatrization of duodenum. |
| 8 | Male, 54. Ten years' history of hyperacid type of indigestion, flatulence, and distension in right iliac fossa three hours after food. | <i>Fig. 20.</i> —24 hours after opaque meal. Appendix seen filled imperfectly at all stages; emptying much delayed. Terminal ileum anchored to iliac fossa; great delay in ileum. | Tip of appendix fibrous. (See coloured drawing VIII.) Lane's kink in ileum. |
| 9 (713) | Male, 38. Occasional attacks of indigestion for over 20 years. Hyperacidity. | Proximal part of appendix much dilated. A little diffuse barium seen to enter distal part 4 hours earlier does not now show; it appeared packed with stationary faecal matter. Material delayed in dilated proximal part of appendix and adjoining part of caecum after rest of bowel was empty. Also X ray evidence of lesion of duodenal cap. | Appendix bound down; constriction near middle. Also a hard scar in first part of duodenum. |
| 10 | Female, 18. Pain after food; much worse at periods. | <i>Fig. 21.</i> —10 hours after opaque meal. 1 regular bulbous appendix; delayed emptying; no tenderness; ileal stasis. | Appendix ½". Signs of recent inflammation—e.g., thickened mucous lining and injected subperitoneal vessels. |
| 11 (826) | Female, 25. Attack of abdominal pain, tiredness, and anorexia six weeks before, succeeded as it passed off by pricking pain in right iliac fossa. | <i>Fig. 22.</i> —24 hours after opaque meal. Appendix has irregular outline, proximal part much the larger at all stages. Hooked appearance associated with concretion shown. No tenderness. Ileal stasis. | Whole appendix x thickened; three concretions. |
| 12 (788) | Female, 36. Occasional attacks of epigastric discomfort, with vomiting, for years. Three days before admission more severe gnawing ache, pyrexia, rapid pulse, and furred tongue. Tenderness to right of umbilicus. | <i>Fig. 23.</i> —6 hours after opaque meal. Appendix filled unevenly; irregular outline, constriction. Proximal part not mobile; tender. Appearance constant. Terminal ileum on right of picture; ileal stasis. <i>Fig. 24.</i> —At 36 hours. Stenosis at junction of middle and proximal third. Distal part now filled better; irregular outline; spasm near end. Dropped transverse colon lies to right of picture. | Operation 7 days later. Appendix partially bound to caecum near base and kinked; bulbous end. It had appearance of subcutaneous inflammation. |
| 13 | Male, 25. Pain and tenderness in right iliac fossa. Had vomited twice. | <i>Fig. 25.</i> —14 hours after opaque meal. Appendix showed irregular outline, spasm, and tenderness. No ileal stasis. | Very long appendix. Two patches of inflammation of mucous membrane. |
| 14 | Male, 14. Two mild attacks of appendicitis. Headaches. | <i>Fig. 29.</i> —10 hours after opaque meal. Appendix showed irregular outline, contracted vigorously; was tender. End of appendiceal shadow seen spreading. Ileal terminal appeared incapable of normal dilatation at all stages; much stasis. | Appendix had been inflamed, constricted by band; was narrowed near base, dilated at middle part. Ileum bound down. |
| 15 | Female, 37. Had had dysentery. Sought advice for loss of flesh and appetite. Mild indigestion. | <i>Fig. 27.</i> —8 hours after opaque meal. Appendix showed constriction, constant, near base. Terminal part seen to contain inopaque material. Some ileal stasis. <i>Fig. 28.</i> —At 8½ hours. Shadow of appendix shows that what appeared kink in <i>Fig. 27</i> is rounded curve. Sharp bend in ascending colon, which is fastened to transverse colon; irregular segmentation in both. Calcareous glands seen; | Appendix showed constriction; large bowel bent and adherent as described. Calcareous glands were removed. |

* The appearance was not altered by gentle pressure, as is sometimes possible when blockage is due to soft matter or bubble.

DETAILS OF 36 CASES IN WHICH THE RADIOGRAPHIC AND OPERATIVE FINDINGS HAVE BEEN COMPARED;
AND INDEX TO FIGURES OF DISEASED APPENDICES—(Continued).

| Case. | Clinical summary. | X ray. | Operation. |
|-------------|--|--|--|
| 16 (275) | Male, 45. Patient X-rayed 18 months before. Meal of porridge, milk, and barium. Appendix not seen. | Long curled appendix seen lying external to cæcum. Ileal stasis. | Operation a year later; appendix found as described. Calcareous gland in its mesentery close to appendix wall, causing bend in proximal part; vessels in this region somewhat injected. |
| 17 | Male, 30. Acute appendicitis 12 years ago; appendicectomy refused. Milder attacks followed; increasing constipation; frequent distension after food. Condition becoming grave. | <i>Fig. 26.</i> —10 hours after opaque meal. Appendix retro-cæcal and fixed, but position could be made out and is shown in explanatory diagram. Whole region tender. Terminal ileum constricted; enormous dilatation of ileum behind constriction; marked stasis. | Terminal ileum, cæcum, and appendix were wrapped tightly in inflammatory tissue thought to have arisen from disease of appendix. Ileostomy was done as temporary measure, but issue was fatal. |
| 18 (685) | Male, 59. Patient sought admission for severe pain. Hyperacidity; X ray evidence of lesion about pyloric region. | Appendix showed two constant narrowings and hooked appearance; material remained in it at 72 hours, cæcum having discharged its contents. Ileal stasis. | Pylorus adherent to gall-bladder and liver. Appendix contained two hardened masses of faeces, one fixed and one movable. |
| 19 (619) | Discomfort after food 4 months. Hyperacidity. Symptoms improved with treatment. Six weeks later pain and tenderness in right iliac fossa for 24 hours with pyrexia. | Appendix kinked at middle where outline was irregular; it appeared fixed, though moving freely with cæcum. Tip did not empty its contents for over 12 hours after cæcum. No ileal stasis. | Appendix inflamed. |
| 20 | Male, 60. 15 years' history of excessive flatulence after food. | Proximal part of appendix was kinked and irregular in outline. Much ileal stasis. | At operation appendix adherent to ileum and kinked. Jackson's membrane and Lane's kink. |
| 21 | Female, 12. Periodic bilious attacks. | Appendix showed persistent bulbous appearance; constriction beyond. No tenderness. No ileal stasis. | Showed dilatation and constriction. |
| 22 | Female, 22. Nutrition poor; occasional bilious attacks; vomiting; no pain. | Base only of appendix seen. Ileal stasis. | All appendix except first inch bound down. A Lane's band. |
| 23 | Male, 38. Symptoms suggested duodenal ulceration. | Appendix appears fixed along inner border of cæcum. X ray evidence of duodenal ulcer. | Duodenal ulcer. Appendix adherent as described, and extended about half-way up ascending colon. Otherwise it appeared healthy inside and out. |
| 24 | Male, 12. Recurrent attacks of vomiting; a little pain. | Cæcum lay under ribs. Appendix appeared kinked. It contained chiefly air, could not be displaced; was tender. No ileal stasis. | Appendix lay as described. It was kinked by band of adhesions and had been inflamed. |
| 25 | Male, 65. Long-standing pain in right side of abdomen and constipation. | Appendix retro-cæcal and fixed; otherwise appeared normal. Ileal stasis. | Appendix adherent behind cæcum. Jackson's membrane. |
| 26 | Female, 27. Indigestion, constipation, and anæmia. Had been treated as case of gastric ulcer. | Appendix lay behind cæcum. Ileal terminal filled irregularly; much delay therein. | Retro-cæcal appendix adherent to terminal ileum. Stomach normal. |
| 27 | Female, 42. Symptoms of duodenal ulceration. | Appendix filled in part only; not tender. X ray evidence of duodenal lesion. No ileal stasis. | Duodenal ulcer. Appendix had been inflamed and was kinked. |
| 28 | Female, 28. Pain in right side of abdomen near ribs, going round to back. | Very little opaque material passed into appendix. Some ileal stasis. | There were adhesions between appendix and terminal ileum. |
| 29 | Male, 10. Not thriving; occasional bilious attacks; vomiting. No pain. | Appendix not seen. Ileal stasis. | Appendix kinked and not patent. |
| 30 | Male, 50. Symptoms of duodenal ulceration. | No barium seen in appendix. No ileal stasis. | Duodenal ulcer. Appendix was represented by fibrous cord. |
| 31 | Female, 18. Intermittent pain in right side radiating to back, never acute; constipation and poor appetite. Tender spot on palpation. | Appendix showed irregular bulbous outline; was tender. Ileal stasis. | Appendix dilated in places; had been inflamed. |
| 32 | Male, 42. Pain to right of umbilicus relieved by emptying bowel. Constipation. Had had appendicitis 17 years before. Dilated ascending colon. | Only first part of appendix filled; this was tender on pressure. | Old and recent adhesions about appendix which was patent for about an inch. Distal part obliterated. |
| 33 | Female, 16. Recurring abdominal discomfort with indigestion. Six weeks ago pain in right iliac fossa and rise of temperature. | Proximal part of appendix irregular; spasm seen beyond. Distal part kinked. Material remained in appendix for 20 days. | Appendix loosely anchored to brim of pelvis. Distal part kinked; contained concretions. |
| 34 | Male, 19. Indigestion several years; periodic attacks of pain in abdomen, especially to right. Bouts of diarrhoea and constipation. | Appendix lay behind cæcum, filled irregularly, and appeared rigid. | Appendix lay behind cæcum and showed irregular narrowings. |
| 35 (823) | Female, 37. Ten years' history of epigastric pain two hours after food, flatulence, and constipation. Recently nausea, salivation, and retching after exertion. Gastric juice hyperacid. | Proximal part of appendix dilated, with narrowing beyond; narrow portion appeared fixed and kinked. Tip reached to middle of spine. Crater of gastric ulcer seen on lesser curvature, and arrest of peristalsis. | Appendix long, kinked, and contained large concretion at distal end. Gastric ulcer on lesser curvature of stomach. |
| 36 | Female, 28. Periods of diarrhoea since childhood. In last five years flatulence, heartburn, general discomfort, irritability, and depression. Mucus in stools at times. | Appendix much dilated; spasm at one point, with small projection beyond. Distal part did not fill. Material remained at 72 hours when rest of bowel was clear. | Appendix hypertrophied and wall oedematous. Several concretions. |

Figures from Cases Not Operated Upon.

Fig. 30, No. 587.—Male, aged 70. 12 hours after opaque meal. The appendix had an irregular outline and showed great over-activity, waves of contraction passing material continually from the base towards the tip. The waves ceased where the appendix became bulbous. Ileal stasis. The patient had periodic indigestion with vomiting, but had recently had the prostate excised. No further procedure was advised at present.

Fig. 31, No. 792.—Male, aged 48. 7 hours after opaque meal. Early stages of filling with wide lumen.

Fig. 32.—The same. 20 seconds later. A narrow curved tip can be seen. There was a little ileal stasis.

Fig. 33, No. 480.—Male, aged 49. 9 hours after opaque meal. The appendix shows a dilated proximal part with hook appearance, and is abruptly bent. Spasm. It is tender. The patient is subject to cramping pains on the right side of the abdomen. There were reasons against operation, but he was advised that he must not go far away from the possibility of surgical help. There was a little ileal stasis.

Fig. 34, No. 689.—Male, aged 50. 48 hours after opaque meal. Retro-cæcal appendix with irregular outline. Stasis; the cæcum is partly empty. At 96 hours when the rest of the bowel was clear there was still a residue in the tip of the appendix. No ileal stasis.

Fig. 35.—Female, aged 14. 120 hours after opaque meal. Stasis. 28 days later the opaque material was still to be seen in the appendix.

usually at the spot pressed upon, but sometimes in the left side of the abdomen. The temperament and general condition of the patient must never be forgotten in interpreting this sign.

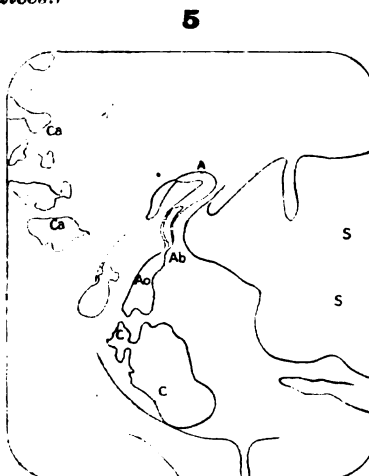
In a case of serious gastric disorder the appendix lumen was large and filled and emptied naturally, but the patient complained of severe pain when it was pressed upon gently.

He was X rayed again after a fortnight, the same sign being obtained several times in each series of observations. In recommending immediate exploration of the stomach the opinion was given that the appendix was inflamed. At the operation the stomach was found to be the seat of a growth, but the appendix was healthy. This is the only case so far in which we have thought the appendix to be diseased and it has not proved to be so at operation.

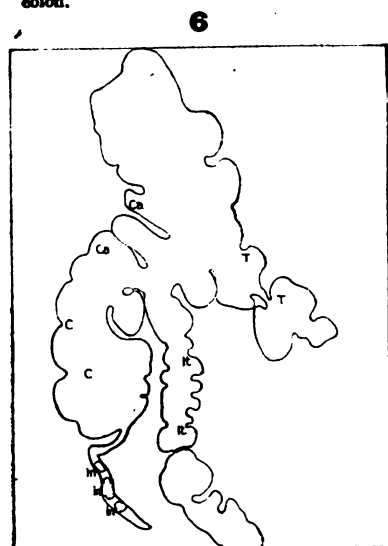
Explanatory Diagrams to Figs. 3, 5, 6, 11, and 12. (Normal Appendices.)



A, Appendix. Ao, its orifice. C, Cæcum. It, Ileal terminal. T, Segments of transverse colon.



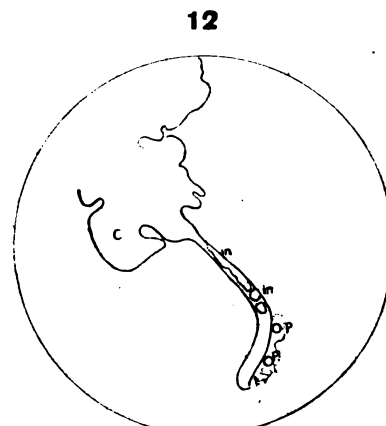
A, Appendix. Ab, Its base. Ao, Its orifice. C, Cæcum. Ca, Traces in ascending colon. S, Sigmoid.



C, Cæcum. Ca, Ascending colon. in, Spaces of inopaque material in appendix. It, Ileal terminal. T, Transverse colon.



Ab, Appendix base. in, Inopaque material. pp, Pellets in appendix tip. C, Cæcum.



C, Cæcum. in, Inopaque material. p, pellet.

INDEX TO FIGURES OF NORMAL APPENDICES.

In all the figures the observer is facing the patient. The observer's left is, therefore, the right-hand side of the body.

Fig. 1. Male, aged 12. 8 hours after opaque meal. The appendix is S-shaped, lying between the cæcum, on the observer's left hand, and the terminal ileum, on the right. The little projection just below where the shadow of the appendix leaves the cæcum is due to a wave of contraction in the part of the cæcum from which the appendix arises. This wave was seen to be travelling appendix-wards. The apparent gap in the shadow of the ileum, opposite the appendix tip, is due to a wave of contraction forcing the contents of the ileum towards the cæcum.

Fig. 2 (No. 570). Male, aged 47. 9 hours after opaque meal. The shadow of the transverse colon lies to the observer's right.

Fig. 3 (No. 559). Male, aged 58. 7 hours after opaque meal. Semi-lateral view from the patient's left. The appendix lies behind the cæcum. See explanatory diagram.

Fig. 4 (No. 514). Female, aged 23. 6½ hours after opaque meal. The cæcum lies in the pelvis. The ileum is seen descending in the middle line to join it. The appendix lies to the left of the middle line.

Fig. 5. Female, aged 16. 24 hours after opaque meal. The cæcum is in the pelvis and the appendix in the iliac fossa. It was seen to fill and empty several times, and was movable. The dark mass to the observer's right is the sigmoid flexure. At a subsequent operation this appendix was seen to be normal. See explanatory diagram.

Fig. 6. Female, aged 37. 10 hours after opaque meal. The appendix shows a dotted appearance, from the alternation of opaque and inopaque material. See explanatory diagram.

Fig. 7. To show movement of the appendix. The same subject as Fig. 1. Two successive exposures were given within one second on the same plate. The blurring of the shadow as compared with Fig. 1 shows how the tip was waving. This photograph was taken three seconds after Fig. 1. A comparison of the two shows also changes in the outlines of the ileum and cæcum due to contractions.

Fig. 8. To show movement of the appendix. Male, aged 11. 24 hours after opaque meal. Two exposures within one second. The blurring of the tip shows movement. A wave of contraction, appendix-ward, is taking place in the part of the cæcum from which the appendix arises. The proximal part of the appendix is contracted.

Fig. 9. The same subject. One exposure three seconds later than Fig. 8. No contraction is visible in the part of the cæcum from which the appendix arises. The proximal part of the appendix is now relaxed and filled with opaque material.

Fig. 10 (No. 569). Male, aged 74. 60 hours after opaque meal. The appendix shows no diminution of lumen on account of age. At 72 hours the appendix and cæcum were empty.

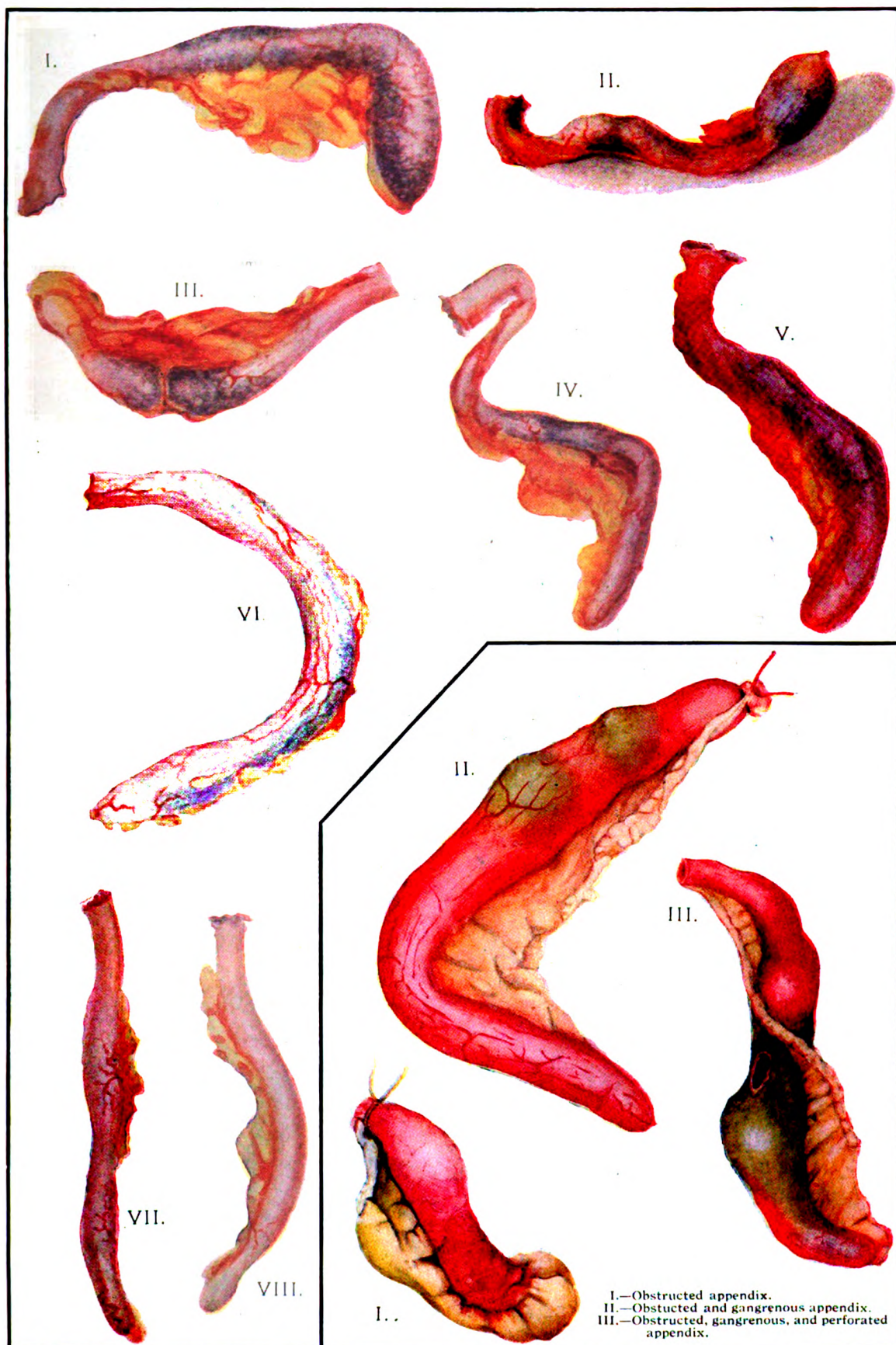
Fig. 11 (No. 493). Male, aged 34. 7 hours after opaque meal. Two shot may be seen in the end of the appendix. See explanatory diagram.

Fig. 12.—The same subject at a later stage. The pellets lie separate in the end of the appendix, which is now curled up. See explanatory diagram.

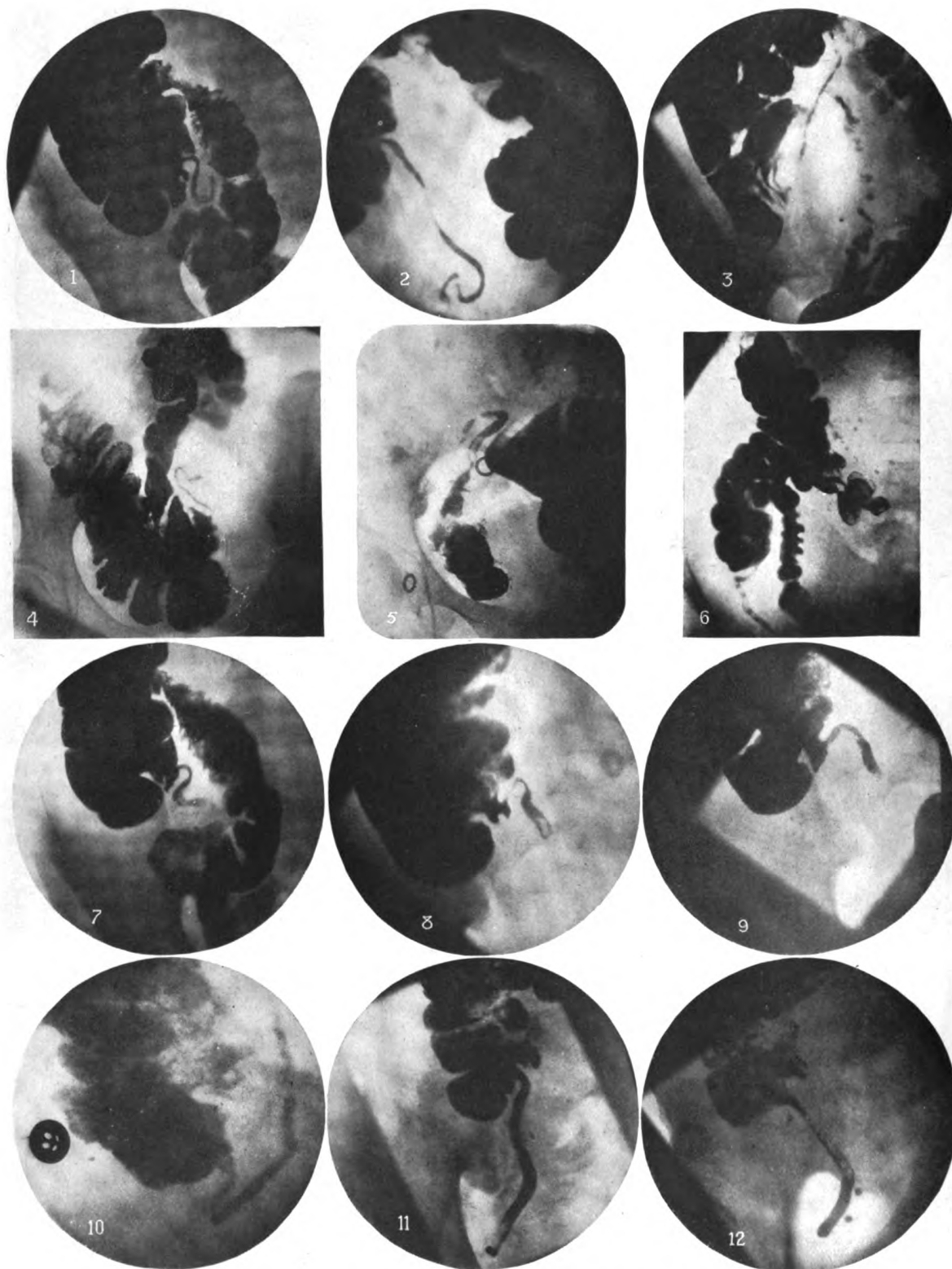
7. Position.

The position of the appendix in the abdomen depends, of course, upon that of the cæcum. Rare cases are found in literature in which the cæcum lay in almost every part of the abdomen. We have three times found it high up in the right loin, the "ascending colon" descending from it before crossing the abdomen as the transverse colon. The shadow of the appendix could be seen projecting upwards above the cæcum. In two of these patients (Fig. 18, Case 6; and Case 24) the appendix was diseased; in the other it was healthy.

The position of the appendix in relation to the cæcum may vary a good deal, and an unusual position is not necessarily evidence of disease. In 49 cases described or illustrated in this paper there were 7 retrocæcal appendices; of these, 5 gave evidence of deficient filling or discharge or other abnormality. (Figs. 14, 15, and 34.) According to George and Leonard, a retrocæcal appendix, if normal, should be freely movable.



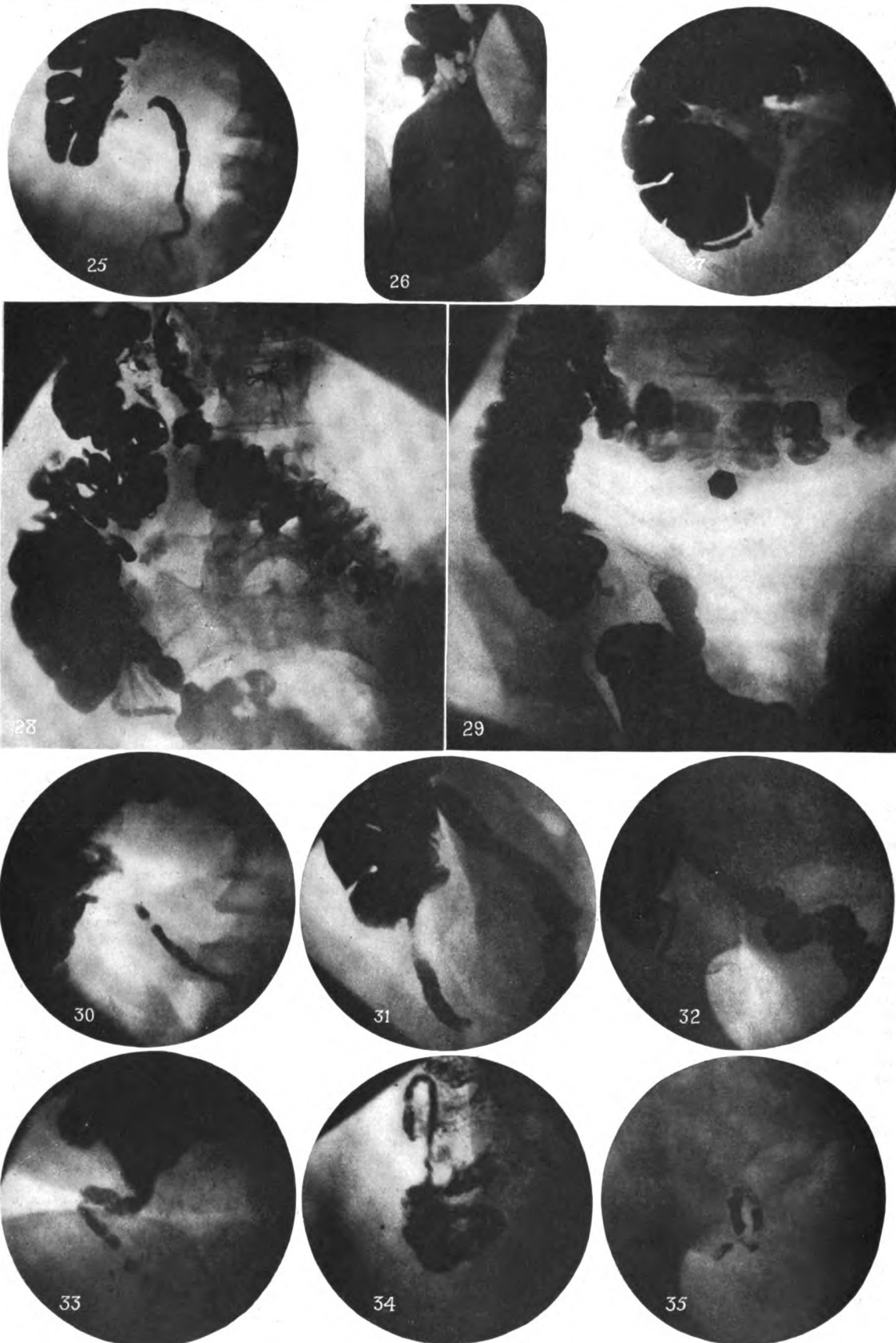
MR. S. T. IRWIN: ACUTE APPENDICITIS AND ACUTE APPENDICULAR OBSTRUCTION.



RADIOGRAMS OF NORMAL APPENDICES.

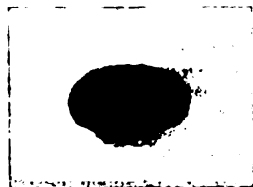


RADIOGRAMS OF DISEASED APPENDICES.



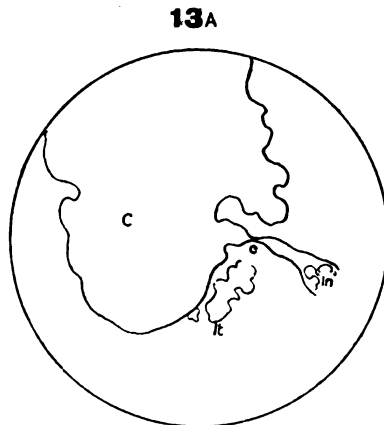
RADIOGRAMS OF DISEASED APPENDICES.

We may summarise the above by saying that the signs of present inflammation are, in addition to pain and other clinical symptoms, a tender point and varying dilatation of the lumen from hyperactivity and spasm, whilst evidence of former disease, recent or remote, is given by concretions, abnormal outline, delay in filling or emptying, adhesions, severe kinks, and, in certain cases at least, by the absence of a shadow.

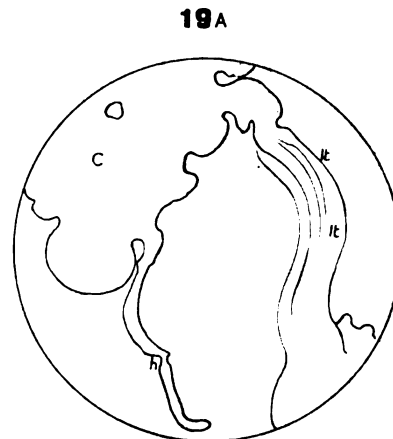


Photograph of concretion from Case 2, see Fig. 14, also coloured drawing.

Figures traced from Additional Photographs in Cases 1 and 7.

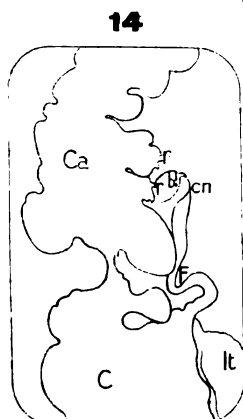


CASE 1.—After 10 hours. C, Caecum. c, Contraction of proximal part as compared with Fig. 13. in, Inopaque material in first bulb. It, Coating in ileal terminal.

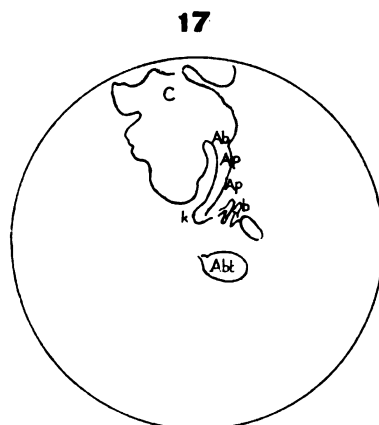


CASE 7.—After 8 hours. C, Caecum. It, Ileal terminal. h, Beginning hook appearance.

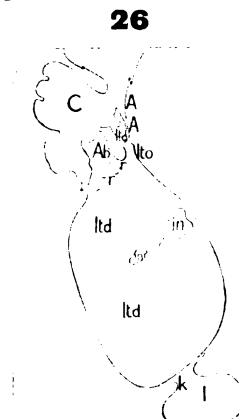
Explanatory Diagrams to Figs. 14, 17, and 26 (Diseased Appendices).



CASE 2.—C, Caecum. Ca, Ascending colon. It, Ileal terminal. bl, Bulb containing concretion. cn, Constriction. f, Fixed portion of loop. r, Ragged outline.



CASE 5.—Ab, Appendix base. Abt, Its bulbous tip. Ap, Its proximal portion. b, Diffuse appearance of barium traversing the first bulb. k, Site of kinking. C, Caecum.



CASE 17.—A, Appendix. Ab, Its base. C, Caecum. In, Inopaque material. I, Ileum. ItD, Dilated ileal terminal. ItO, Obstructed ileal terminal. k, Site of kinking if erect posture is assumed. r, Ragged outline of terminal; site of adhesion to caecum.

Of the last 100 cases examined, in 40 the appendix appeared to be normal, though one of these showed tenderness. This was the case above mentioned, in which the patient was ill owing to a growth of the stomach. In 19 cases the appendix was reported diseased; 11 of these have already been operated upon and the diagnosis confirmed. In 27 slighter abnormalities were found, such as appendical stasis (18 cases), kinking, fixation, partial obliteration or diminution of lumen. In the remaining 14 the appendix was not seen. One of these has been operated upon and a constriction found at the base of the appendix.

We wish to express our thanks to the surgeons who have kindly informed us of the condition of the appendices excised by them, especially to Dr. Manson Fergusson, of Banff (17 cases), Dr. J. C. Galloway, of Banff (5 cases), and Professor J. Marnoch, of Aberdeen University (7 cases). We are also indebted to Mr. Gilbert Barling, Sir Arbuthnot Lane, Mr. Hugh Lett, Sir Berkeley Moynihan, Mr. H. S. Pendlebury, Mr. J. H. Pringle, Sir Harold Stiles, and Professor Alexis Thomson.

SUMMARY.

1. It is possible to observe the appendix with the X rays, in the large majority of cases, by the use of an opaque meal of buttermilk and barium sulphate after preparation with castor oil. An account is given of the methods and manipulations which have been found useful in the examination of 300 appendices.

2. The normal appendix fills and empties about the same time as the caecum. It may, especially in young people, fill and empty repeatedly, while the caecum remains full. The best view is usually obtained about 12 to 14 hours after the opaque meal. Twelve photographs of normal appendices are shown.

3. Direct X ray examination of the appendix is of much help in the diagnosis of chronic appendicitis. With adequate observation it is found that the proportion of cases in which no barium sulphate enters the appendix is small.

4. In determining whether the appendix is or has been diseased attention must be paid to filling and emptying, shape, mobility, position, and the presence of concretions, hyperactivity, spasm, or tenderness. Continued contractions and spasm are associated with active inflammation. The existence of a tender point is a valuable sign, but requires care in its interpretation.

5. Details are given of 36 cases in which the X ray reports are compared with the operative findings. In all of these the diagnosis was verified at the operation. Twenty-three photographs of diseased appendices are shown and eight coloured drawings of appendices after removal.

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ACUTE APPENDICITIS AND ACUTE APPENDICULAR OBSTRUCTION.

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(With Coloured Illustrations.)

Introduction.

IT is the aim of this paper to analyse the results following upon 131 consecutive urgent operations for acute disease of the appendix; to discuss and, if possible, to elucidate some of the apparent incongruities between physical signs and pathological findings; to offer some observations upon the variations in the anamnesis; and, last of all, to direct special attention to a large and homogeneous class of case in which the origin of the disease and its morbid anatomy are primarily and directly due to obstruction.

This list of cases includes operations performed in the most unpromising surgical surroundings, both in respect of the operation itself and of the subsequent nursing, though there seems to be often more risk in the removal of a patient in certain types of the disease than in operating where few facilities are at hand and many things must be improvised. It is not the actual operation which is severely handicapped, but rather the subsequent nursing of the case—if, for example, it be found necessary, as indeed it often is in such cases, to drain the abdominal cavity. Removal of a patient may entail serious risks in that (1) it delays the operation; (2) it may provoke rupture of a thin-walled gangrenous appendix; (3) it may cause a localised abscess to burst and thus infect the general peritoneal fluid; or (4) it may cause direct extension of infective material into the subphrenic region. Where removal must be faced this should be carried out in the Fowler position (Crawford Renton).

Let me call attention here to the frequency with which pus is met with in cases demanding surgical interference. Out of the 131 cases, no less than 84 had already gone on to suppuration. It was Finney who said:—

"The presence of pus in an appendicitis operation is *prima facie* evidence of a mistake on the part of somebody, the patient, the physician, or the surgeon."

In my own series all excepting one, and that one already perforated, were operated on as soon as seen. In my opinion pus is due not so much to a failure to recognise that the appendix is at fault as to a failure to recognise by its symptoms and signs the grave type of the disease in its early stage. And this suggests the question of diagnosis—often easy, but not seldom difficult, and at times well-nigh impossible. It is not enough to arrive at the conclusion in any case that the appendix is at fault, though this is, of course, the first step, but we should also aim at deciding whether it be a case of (1) acute appendicitis or (2) acute appendicular obstruction. If the latter, what is the condition of the appendix wall? Is it gangrenous, with perforation imminent? or has perforation already occurred and is there pus present, and, if so, is the pus encapsuled or is there infection of the general peritoneal contents?

If the appendix be gangrenous, and if perforation be close at hand, then only the gravest disadvantages will justify delay in operating. Mr. Robert Campbell, in first directing attention to acute appendicular obstruction, showed what a dangerous form of the disease it was—that it has a definite course, extending usually for a period of not less than 36 hours before perforation, and after perforation it has a very grave issue, for the contents of the distended appendix

are under considerable pressure, and when rupture occurs the pus is often sprayed far and wide throughout the general peritoneal cavity. It was to this type of the disease, doubtless, that Sir Berkeley Moynihan referred in his vivid picture of the effect of the homely dose of castor-oil which usually anticipates by some hours the arrival of the surgeon, precipitating a calamity which it is his aim to avert, and transforming an aseptic operation field into a veritable quagmire.

The series under review has been divided up as follows:—

1. True acute appendicitis—34 cases.
2. In edute—10 cases, which from insufficiency of evidence I was unable to classify either as inflammatory or obstructive.
3. Acute appendicular obstruction—87 cases, which have been subdivided further into—
Stage I. Obstructed only (10 cases);
Stage II. Obstructed and gangrenous (18 cases); and
Stage III. Obstructed, gangrenous, and perforated (59 cases).

Each group of cases has been arranged in sequence according to the interval of time between the appearance of symptoms and time of operation.*

True Acute Appendicitis.

The following case is an example of acute appendicitis:—

CASE 30.—Patient, man aged 24, otherwise healthy, was seen with Dr. G. F. Campbell on July 17th, 1913. He had taken ill about eight days before, with feeling of sickness, especially after meals. No actual vomiting; nausea persistent and distressing. The bowels became sluggish. He had a varying amount of pain, worse in evening and at night, and sometimes had to be relieved by poulticing. He had suffered from indigestion for some years. Pulse was 100, temperature 99° F. There was a tender point just internal to anterior superior spine on the right side; small phlegmon present. Operation through right rectus incision; appendix inflamed with thickened walls, lying external to caecum and buried in plastic lymph. No pus; abdomen closed in layers without drainage.

I would especially direct attention to the indefinite onset, to the absence of any great pain as initial symptom, and to the absence of troublesome constipation. Many of these cases, however, go on to suppuration. These are cases of acute appendicitis in which, from the onset, the temperature and the pulse are elevated, and in which pain, though present, is not of such a severe type as in the cases due to obstruction, and even from its first beginnings is definitely localised to the right iliac fossa. In these cases, too, vomiting and constipation are not troublesome, and if pus be present it is small in amount and well walled off by the surrounding organs, which are adherent to the appendix and the caecum. The walls of the appendix are thick and fleshy and there is no distension of its cavity.

In this, the commonest type of acute appendicitis, if perforation occurs it is of less importance than in the obstructive cases for two reasons: (1) There is but little material within the appendix, no distension of its lumen, and therefore no increase of tension; and (2) the appendix is well surrounded by adhesions. Mention must be made, however, of those inflammatory cases in which perforation, if not the first, is an early symptom of disease. In such cases, no doubt, obstruction plays a prominent part, but the group about to be described under the term acute appendicular obstruction is so definite, so large, and so important from the point of view of prognosis that we do not include those cases in it. In one case (No. 2) perforation occurred so early that it can only be explained by antecedent ulceration, which had so thinned the wall that the slightest increase in tension produced rupture.

Indefinite cases.—To this group I do not wish specifically to refer, except to say that so far as they could be examined the more serious cases showed considerable evidence of being primarily obstructive in origin.

Acute Appendicular Obstruction.

I have come across 89 cases of acute appendicular obstruction, of which 10 showed obstruction only, 18 showed obstruction with a varying amount of gangrene of the wall, and in 59 rupture of the appendix had followed the gangrene. A typical case from the third stage of this group is as follows:—

CASE 99.—Youth, aged 19; taken suddenly ill on Dec. 28th, 1915, with very severe pain in stomach; he vomited three times that evening. His bowels till then regular, became constipated. He was seen next morning by Dr. Robert Boyd. Patient complained of pain in left hypochondriac region. Pulse and temperature normal. Slight rigidity over right rectus below. Breath was foul, and tongue thickly coated; otherwise he looked well. The next day he was again seized with a

* From pressure on space, the schedule of cases could not be printed.

(Continued from preceding page.)

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sudden severe pain, now localised to right lower abdomen. Temperature 99°, pulse 100. I was asked by Dr. Boyd to see him, and diagnosing a perforated gangrenous appendix, had him removed to the Royal Victoria Hospital, where, through the kindness of Mr. A. B. Mitchell, I was allowed to operate upon him. Operation under open ether; right rectus incision. Appendix found gangrenous for about 2 inches from tip; large perforation, size of a sixpence, lying in abscess cavity containing about an ounce of pus. Appendix removed, cavity drained; good recovery.

The foregoing is a type representative of a very large percentage of the critical cases which a surgeon is called upon to see. They are, so far as my experience goes, the most serious of all the common emergencies in abdominal surgery, and consider for a moment what the pathology of this case was. I make no apology for quoting briefly from the recent experimental work of Mr. D. P. D. Wilkie, who demonstrated the pathological changes which take place in an isolated loop of small intestine into which some caecal content has been introduced, the loop being completely obstructed and there being no interference with its blood supply:—

"When the loop is filled moderately full with caecal content, the animal having been fed on a carbohydrate diet (porridge), distension occurs with fetid faeculo-purulent fluid, and either an empyema of the loop results or a gangrenous patch develops with perforation. With the loop filled with caecal content in an animal previously fed on a rich protein diet (light) the changes are much more striking, and as a rule the animal is dead within 20 hours. On opening the abdomen post mortem the loop is seen to be green and gangrenous."

These are the changes which occur in an occluded piece of animal's intestine, and similar changes occur when the human appendix becomes obstructed at or near its base. The lumen beyond the obstruction becomes rapidly distended with faeculo-purulent material and localised patches, or the whole organ may become gangrenous, to be followed later by rupture.

A consideration of Wilkie's experiments, our own experience of the morbid anatomy of cases seen in the earlier stages, and the appearances found at the operation, agree in indicating that in the above case the symptoms arose from an obstruction near the base of the appendix; that there was present within the appendix a certain amount of faeculent matter; that this obstruction led to gangrene of the appendix; and that, following the gangrene, perforation had supervened. If, then, this be the pathology, and if the appalling mortality in acute diseases of the appendix be due to this type of case, then obviously the remedy lies in diagnosing the condition before perforation occurs; in other words, had one been able to foresee that, in spite of the normal temperature and normal pulse, there lay interned within his abdominal cavity a sloughing appendix, then no excuse would have justified us in allowing perforation to take place.

That this is no unusual type of case, and that symptoms and signs are often unalarming on the second day, numerous arguments and examples go to prove. Here is another:—

CASE 100.—On Dec. 8th, 1914, at the Royal Victoria Hospital, I was asked by Mr. A. Pullerton to operate upon a boy, aged 10, just admitted to hospital. He had taken ill on Dec. 6th. He had been seen on the second day by his own doctor, who was present at the operation, and who told me that the boy suffered considerable pain on Dec. 6th but on the 7th he was so much better that he thought that he might be able to do without operation. On the night of Dec. 7th he was again attacked by acute pain, and when the doctor saw him next morning he sent him straight into hospital. On admission temperature 98°, pulse 122. Large area of dullness present on right lower abdomen. Operated on by gridiron incision, pus released, and tube placed in abscess cavity.

The boy's condition precluded the removal of the appendix, but there can be no reasonable doubt that this case was identical with the one already quoted.

Causation of Obstruction of Appendix.

In these obstructive cases it is our contention that the primary cause of the disease is obstruction of the lumen of the appendix. On examination of the appendices removed at operation it is found that obstruction may be due to one of five causes:—(1) Concretions; (2) strictures; (3) kinks; (4) bands; (5) worms, fruit-seeds, and other foreign bodies.

Concretions are by far the commonest form of obstruction, especially in those cases which go on to the production of gangrene: in my series they were present in about 50 out of 87 obstructed cases. In cases of completely gangrenous appendix coproliths will be found dividing the healthy from the diseased portion, and in the early stages where gangrene is not evident outside it will be found on opening the appendix that the mucous membrane of the distal portion is sloughing. It is no uncommon thing to find, besides the obstructing concretions, several others lying

within the cavity of the appendix. After perforation one or more concretions may escape into the abscess sac, and in one case (No. 119) the abdominal wound healed completely over such a foreign body, which was only found at the subsequent operation for the removal of the appendix.

The exact relationship of these concretions to the disease has not hitherto been definitely established. In our opinion they are the definite *causa causans* of the particular form of the disease now under discussion. They act by suddenly blocking the lumen of the appendix and, by preventing the return of the contents of the appendix into the caecum, give rise to the acute symptoms of pain in the upper abdomen and vomiting already referred to. If the obstruction be not relieved, and more especially, as has been shown by Wilkie, if the patient has been fed chiefly on proteid food, the vitality of the appendix rapidly falls, and in from 30 to 40 hours sloughing supervenes.

Strictures.—The second form of obstruction to which I would direct attention is stricture, of which at least six examples were met with. I first observed this in Case 54. I find that strictures of the appendix have been well recognised and described for many years, notably by Abbé, of New York, and others. These have been attributed by Runyon, as quoted by Kelly and Hurdon, to previous attacks of appendicitis with ulceration, in which the mucous lining of the appendix has been destroyed. In Case 54 the boy had never previously suffered from any form of disease, and it may therefore be an example of what Lenzmann and Ewald have described as *appendicitis larvata*. It adds a further argument to the hypothesis of obstruction by proving that inflammatory changes, even to the extent of ulceration, may take place without arousing the suspicion of disease in the mind of the patient.

I saw another case in which stricture and concretions were combined. This was Case 69, in which an ordinary third-day perforated gangrenous appendix was found. I showed this to Professor J. Symington, and on his advice it was first hardened in formalin, then cut with a razor till we found the exact position of the stricture. This strictured area we then prepared in the ordinary way for microscopical examination. It showed a mass of newly formed granular tissue filling up the lumen of the appendix. It was continuous with the submucous coat and no trace of mucous membrane could be found. Since then Dr. W. W. D. Thomson has kindly investigated the appendix from Case 82.

This was a typical case in which soon after the administration of a dose of castor oil on the second day the patient, a boy of 16½ years, was suddenly seized with pain in the right iliac region. Next day, at operation, we found an appendix obstructed by two complete strictures. Between the strictures the appendix was completely gangrenous and at one point a perforation big enough to admit a slate pencil was found.

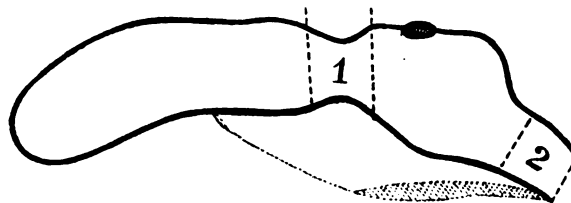


FIG. 1.—Outline drawing of an appendix showing position of two complete strictures at 1 and 2.

A line drawing of this appendix is shown in Fig. 1, and Dr. Thomson has gone fully into its pathology and reports as follows:—

Naked-eye appearance.—The cavity of the appendix is divided by two strictures into three compartments. The proximal compartment is continuous with the cavity of the caecum. Its mucous lining and submucous tissue are alike normal. The middle compartment is completely gangrenous and perforated. The distal compartment is full of pus.

Microscopic appearances.—Serial sections were prepared:—

1. The strictures are both complete. Each is formed of a dense mass of granulation tissue which completely replaces the lumen, epithelial lining, and mucous coat of the appendix. It is continuous with the submucous layer. A photomicrograph of this section is shown in Fig. 2.
2. A section through the middle compartment shows necrosis of all the layers of the appendix, with a ragged perforation at one point.
3. The terminal compartment is swollen, tense, and filled with purulent material swarming with *Bacilli coli*.

Kinks.—The third form of obstruction is that due to a kink which is produced by the contraction of an adhesion between two adjacent parts of the appendix. In this way a sharp angularity is formed. Both ends of the adhesion take their attachment from the appendix.

Bands.—A similar angularity may be caused by a band one end of which is adherent either to the parietal peritoneum or other part of the alimentary canal and the other to a proximal part of the appendix. Contraction of this

band causes the appendix to be drawn out to a sharp angle which interferes with the free passage of the appendicular contents.

In obstruction due to bands and kinks the progress of morbid change is generally slower than in the case of concretions, and so, by giving time for the production of protective adhesions, lessens somewhat the gravity of peritonitis, if and when it appears.

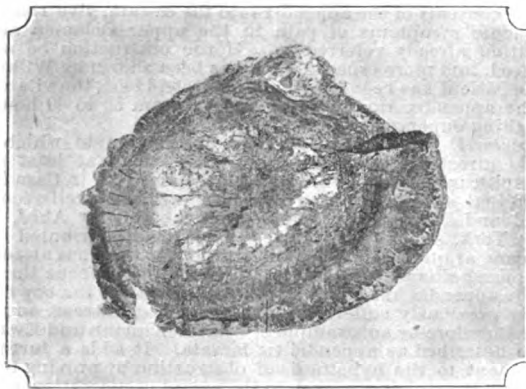


FIG. 2.—Section through stricture at 2. Photo-micrograph.

Foreign bodies, such as intestinal worms, fruit-seeds, &c., are rare forms of obstruction.

Stages of Acute Appendicular Obstruction, with Illustrations.

The late Mr. Edmund Owen, in his book "Appendicitis," makes the deliberate statement that no surgeon of experience pays much attention to history. Rarely can such a statement be justified, least of all in acute disease of the appendix in which there is a well-defined sequence of events and a very definite symptom-complex. It is this symptom-complex which I wish to consider now, and by comparing it with appendices removed at the different stages of the disease to correlate symptoms and signs with pathological findings. There may still be some doubt as to whether in any particular case obstruction did or did not exist in the case of bands or kinks; no such doubt can arise with a concretion which blocks like a ball-valve the appendicular canal. All the examples which I show depend on this cause for the obstruction. Fig. 3 shows a typically obstructed appendix. It is a section of the appendix from Case 58, distended with gelatin and cut longitudinally.

It is difficult from a consideration of preserved specimens to get even the faintest idea of the course and stages of the disease owing to the rapidity with which the characteristic colours disappear and to the fact that no known method of mounting will preserve these delicate colourings. Again I am indebted to Professor Symington for suggesting that these specimens should be drawn to scale and coloured immediately after removal from the abdomen. This course I have followed, and I think the illustrations show in conclusive fashion the morbid changes through which the obstructed appendix passes, and by comparing these with the history and clinical signs we are able to arrive at an accurate estimate of the intra-abdominal condition in any given case.

Stage I.—Coloured Illustration I. is from a coloured drawing of an appendix removed 21 hours after the onset of symptoms (Case 46). (See Coloured Illustrations inset.)

CASE 46.—A man, aged 45, a patient of Dr. W. McWilliam of Banbridge, took ill at 3 A.M. on Oct. 2nd, 1915, and was operated on about midnight. The attack began with very severe pain in the upper abdomen referred to region of umbilicus. Vomiting took place at short intervals throughout day. Pulse and temperature normal. Considerable rigidity in right rectus muscle and tenderness localised to small area immediately below McBurney's point. When I saw him temperature was 98° 6', pulse 84, tongue clean, and breath not foul. The pain was of a colicky character, and between the attacks he was quite comfortable. Small area of tenderness as above stated; otherwise abdomen normal. The diagnosis of obstructed appendix was made and appendicectomy performed. On opening abdomen no sign of inflammation; appendix tense and rigid; concretion felt close to proximal end. Appendix removed. Uninterrupted and rapid recovery.

This is a typical example of the first stage of obstruction of the appendix. There are no signs either local or general of inflammation. There are 10 such cases in the series and results of treatment by operation leave nothing to be desired. The period of disability is short and the risks of complications and sequelæ almost nil. And yet if left to nature or

if treated on medical lines a certain proportion of them will proceed in the direction of gangrene and perforation as exemplified in the succeeding stages.

Stage II.—In the following case operation was performed 24 hours after first symptom.

CASE 55.—Patient, a young woman aged 21, was seen by Dr. W. Martin of Whitehead, on the night of July 10th; history of having been ill with pains in stomach and vomiting for six hours. Temperature and pulse normal; no sign of any trouble in abdomen. He saw her again next day; temperature 100° and pulse 100; he sent her straight into hospital. At operation an appendix obstructed by a concretion at its base was found; very small area of gangrene on one side of organ. (Fig. 4.) Recovery in this case was retarded, as it frequently is in cases of gangrenous appendix, by infection of the layers of the abdominal wall, but the patient ultimately made a satisfactory recovery.

Here we have an appendix exactly similar to the first, but somewhat later in the course of the disease, and it seems reasonable to conclude that this is the second stage of the disease which follows obstruction.

The next case is that of a patient operated on 30 hours after the onset of symptoms. (Coloured Illustration II.)

CASE 58.—A woman aged 35, a patient of Mr. W. Boyd, of Banbridge, took ill at 9.30 P.M. on April 2nd, 1915, with pain in epigastric region and vomiting; symptoms lasted continuously for 12 hours. When Mr. Boyd saw her temperature and pulse were normal; no pain, tenderness, or rigidity in any part of abdomen. Four hours later pain had returned, not now in epigastric region, but in right iliac fossa. Temperature now 101° 2' and pulse 104. When I saw her about 12 hours later (that is 30 hours after onset) temperature was 101°, pulse 108; there was extreme tenderness not only over appendix, but over whole lower abdomen. Fig. 3 and Coloured Illustration II. are from drawings of the appendix which was removed. On opening the abdomen a huge, tense, obstructed appendix was found. During manipulations a concretion was felt to escape into the caecum, and when the appendix was afterwards distended with gelatin a cavity corresponding to this became evident. The appendix contained a number of small concretions and a large quantity of foul pus mixed with faecal matter. There were two considerable areas of gangrene. Recovery uneventful; patient left hospital in four weeks.

Here let me direct attention first of all to the absence of symptoms and signs when first seen by Mr. Boyd, and, secondly, to the moderate rise of temperature and pulse with the appearance of gangrene. This is the further stage in a disease caused by an obstruction.

The next case was operated on 31 hours after the onset of symptoms.

CASE 59.—Man, aged 35, a patient of Dr. G. F. Campbell, of Bangor, took ill on Dec. 21st, 1915, with severe pain over "lower end of breast-bone," and vomiting. Similar attack two years before. After 12 hours the pain began to settle in right side about 1 inch above McBurney's point. Thirty-one hours after onset tongue was clean, temperature 100° 4', pulse 80; abdomen showed a single tender spot; right rectus muscle somewhat rigid, but not markedly so. Operation immediately by gridiron incision. There were some adhesions, but without difficulty the appendix, completely gangrenous, was removed. (Fig. 5.) Stump of appendix could not be invaginated, but was simply ligatured in abdomen.

The appendix was a typically obstructed one in which the whole organ was obstructed, distended, and gangrenous. This man before being operated on declared that he was getting over the attack just as he had got over the previous one, and one could not from clinical signs have denied the possibility of this, and yet we find this foul gangrenous appendix with perforation imminent. It is difficult to decide why in the previously mentioned cases one or two areas of gangrene occur, whilst in this case the whole organ was affected.

Coloured Illustration II. is an example of an unperforated gangrenous appendix, of which there were 18 in the series. They all recovered, though they are somewhat less satisfactory than the foregoing, and mainly for two reasons: (1) a few of them required drainage owing to the suspicion of infection of the peritoneal fluid, and therefore ran the risk of hernia; (2) even in the absence of peritoneal infection there is considerable liability to infection of the abdominal wall, a fact previously pointed out by Mitchell and others. On the whole, prognosis is rarely grave in this series.

Stage III.—Coloured Illustration III. shows the condition of the appendix at a later period.

CASE 90.—Patient, a woman aged 47, seen with Dr. R. Boyd, of Strandtown on Oct. 12th, 1915, had already been ill three days. Examination showed a well-defined mass in the right iliac fossa and on right side of pelvis. Temperature 101° 5'; pulse 108. She was at once sent to hospital and operated upon. There was an abscess of considerable size situated in right iliac fossa and extending down into right side of pelvis. Appendix gangrenous and perforated; and about 1½ inches from base obstructed by large concretion; also concretion in abscess cavity.

This is unfortunately the usual type which one meets with at operation, but the previous history shows that it began with the same early symptoms of vomiting and pain in the upper abdomen; after 24 hours pain in the iliac fossa as

secondary inflammatory changes reach the peritoneal coat of the appendix; after 36 hours perforation ushers in suppurative peritonitis, and soon a large abscess extending into the pelvis has developed.

This is a type of the 59 obstructed, gangrenous, and perforated appendices occurring in Stage III. A consideration of their histories shows that most of them were seen during the second stage, and not a few of them even in the first stage. As a profession, therefore, we cannot absolve ourselves from responsibility for failing to recognise, or at all events to prevent, the dangerous course of the disease.

First, and most important, look at the death-rate—8 deaths out of 59 cases, 13.5 per cent. It may be urged by some that such a high mortality was due to immediate operation. In only one case can I think, on looking back, that I might have been justified in postponing operation (No. 102, a child aged 2½ years), though, on the other hand, there would certainly have been also the opposite possibility that the child would in 12 hours have been moribund. Of the other deaths two, Nos. 40 and 114, were due to rupture of a localised abscess into the general peritoneal cavity—a most fatal complication and one directly due to delay in operating.

prominent feature, and recurs from time to time as the patient tries to relieve his thirst. Constipation is usually a prominent feature. These are the symptoms of the first stage—as for signs, the temperature rarely exceeds 99°, the pulse may show a slight increase in frequency, though it is often normal, and between the attacks of pain the patient is comfortable. On examination of the abdomen some tenderness will be found when pressure is made over the distended appendix, but the rectus shows but little rigidity. Operation at this stage reveals an appendix tense, rigid, and distended, as exemplified by Coloured Illustration I.

Twenty-four hours later, if the obstruction persists, we shall find diminution of pain, with disappearance of vomiting. The temperature and pulse are now slightly elevated, the temperature being, say, 99° to 100° and the pulse 110. An examination of the abdomen shows not only an area of extreme tenderness near McBurney's point, but also a wide area of rigidity. Operation reveals an appendix partially or wholly gangrenous, surrounded by a varying amount of plastic lymph gluing it to the neighbouring organs. Sometimes the omentum will be found wrapped round the diseased organ and closing off the general peritoneal cavity, which contains an excess of fluid. If such were the circumstances surrounding every perforation the outlook would not be so gloomy, but often we find no omental seftny on

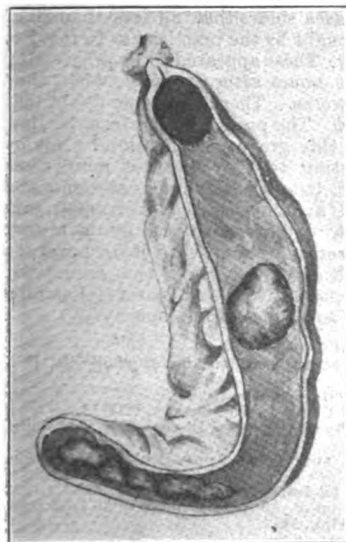


FIG. 3.—Longitudinal section of appendix obstructed by concretion and containing concretions.

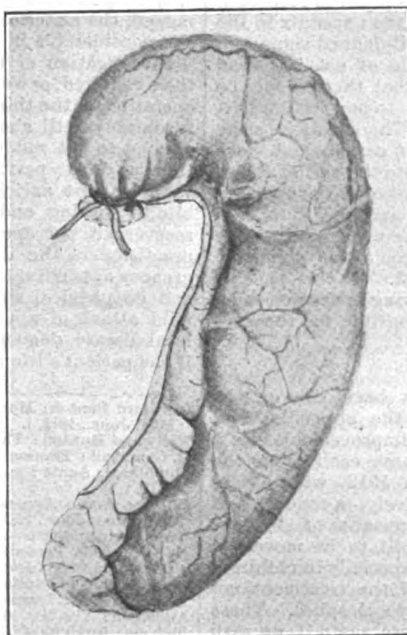


FIG. 4.—Obstructed and gangrenous appendix.



FIG. 5.—Obstructed and completely gangrenous appendix.

Two died of pneumonia, which could not have been foreseen. One death was due to acute intestinal obstruction (No. 95), which had gone on well for a fortnight, the temperature and pulse having been normal for ten days. Three cases, Nos. 87, 97, and 106, all children, were moribund on admission to hospital—they had their abscesses opened under local anaesthesia, though they were past all but the remotest chance of recovery. What evidence is there here for further delay when at least five of the cases had already been delayed too long, viz., the three last mentioned and the two cases of ruptured abscess?

So much for the death-rate. Let us now look at the complications—secondary abscess, faecal fistula, hernia, pneumonia, &c.; of such the earlier cases are free. Then one must consider prolonged convalescence, the semi-invalidism, and the incapacity for work which follow these.

Typical Case of Obstruction of the Appendix.

Keeping in mind these stages, let us now endeavour to reconstruct a typical case of acute appendicular obstruction, from the onset of symptoms until perforative peritonitis occurs.

The disease begins with severe pain usually referred to the epigastric or umbilical region; it is colicky in character and is very severe, it is soon succeeded by vomiting which, though occasionally absent, is usually a

patrol, and when rupture occurs the line is broken and extensive invasion of the peritoneum takes place. Figs. 4 and 5 and Coloured Illustration II. are examples of this stage.

When rupture of the gangrenous appendix and infection of the peritoneal fluid have occurred we shall find a further attack of pain, this time referred to the right iliac fossa, continuous in character and often more severe even than the pain in the original obstruction. Vomiting is not a marked feature of this stage, though a feeling of sickness or slight vomiting may occur. Constipation is still present. At the moment of perforation the temperature may fall to sub-normal, but soon begins to rise again, except in very grave cases, and the pulse is greatly accelerated, running up to perhaps 120, or even more. Examination of the abdomen reveals a board-like rigidity of the muscles over the whole of the right side of the abdomen; the point of maximum tenderness will depend upon the situation of the ruptured appendix. Operation will show either a localised collection of pus or a general peritonitis dependent on whether the material from the appendix has been limited or not. Coloured Illustration III. is an example of an appendix from such a case.

These outlines may be regarded as the ordinary signs and symptoms of a case of obstructed appendix, but certain exceptions must not be lost sight of.

For example, in the case of an appendix which is lying in the pelvis it is not unusual to find both signs and symptoms referred even from the first to the pelvic region, or even to find a gangrenous appendix in the pelvis without definite

symptoms suggestive of an appendix disease at all. In such cases we have to depend on the history of an acute onset, painful micturition, and localised tenderness and swelling on vaginal or rectal examination.

A retrocaecal appendix becoming obstructed produces at first the typical symptoms of pain and vomiting referred to the upper abdomen, but afterwards the pain and tenderness are referred to the flank, or even to the site of renal pain beneath the last rib.

Where the appendix is adherent to the anterior abdominal wall tenderness and rigidity are more marked than when the anterior parietal peritoneum is unaffected.

Is pain ever absent in these cases? Probably it is never absent throughout the attack, but pain and discomfort frequently disappear when gangrene is developing and when rupture is becoming imminent. Comparable to this phenomenon is the disappearance of pain in a strangulated hernia when the gut is becoming gangrenous. Vomiting is a characteristic feature of the early stage of obstruction of the appendix. It is not so severe as in intestinal obstruction, is never faecal, and after the stomach has been emptied is only provoked by the taking of something to relieve thirst. In the late stages of peritonitis, however, the vomiting may be continuous and not infrequently gives place to hiccup.

It will thus be seen that perforation of the appendix in the great majority of cases is preceded by well-defined signs and symptoms, extending usually to a period of not less than 36 hours, and of so definite a character that there should be no excuse for allowing a case to proceed to perforation if it be seen during this preliminary period. There may be some doubt as to the right course to pursue in cases which have already reached Stage III., but in regard to the earlier stages there can be no question that such cases should be operated on without delay, and where the history and the signs lead one to suppose that perforation is near at hand then no delay or disturbance of the patient should be permitted until after the appendix has been removed. In this type of case the presence of pus, far from justifying operation, must be taken as incriminating some one responsible for the care of the patient.

Prognosis.

Within recent years discussion has been rife on the mortality following acute disease of the appendix, and without doubt the figures are showing improvement. Lett compares two series of a thousand cases each from the London Hospital: in 1900-1904 and in 1912, with death-rates of 17.2 and 3.2 per cent. respectively—a reduction of 14 per cent. These results take no cognisance of (1) cases moribund on admission and (2) cases too ill to be moved to hospital—a not inconsiderable number, especially in children. In 1910 Mutch analysed the results of the treatment not necessarily operative, of 545 cases at Guy's Hospital. These gave a mortality of 13 per cent. But here again if we wish to get at the general mortality rate we must allow for those cases which died before removal to hospital was thought of or at all events effected. More recent results will be better, but still it must be admitted that appendicitis (using the term in its generally accepted meaning) is a very lethal disease.

How can this appalling death-roll be reduced? This leads me to ask the further question—What is the direct cause of death in this disease? To this the answer is suppuration. The truth of this has been proved repeatedly. A. B. Mitchell in 1910 analysed the results of 500 consecutive operations for appendicitis at the Royal Victoria Hospital, Belfast; although the total mortality ran up to 15 per cent. yet no single death occurred in a non-suppurative case. In 1910 Anderson reported the results of 973 operations at the Nottingham General Hospital; out of 89 deaths, only 1 occurred in the absence of pus. Burgess out of 500 consecutive operations at the Manchester Royal Infirmary in 1912 found but one death where the inflammation was limited to the appendix. In the series here under review no death followed operation in a clean case. Amongst cases already suppurating I find the following figures (in some cases approximate):—

| Operator. | Sup. cases. | Deaths. | Operator. | Sup. cases. | Deaths. |
|----------------|----------------|------------|----------------|----------------|------------|
| † Beaton ... | 73 ... | 9 (12.3%) | Paterson ... | 56 ... | 5 (8.9%) |
| Billington ... | 360 ... | 48 (13.3%) | Richardson ... | 350 ... | 48 (13.7%) |
| Burgess ... | 365 ... | 39 (10.6%) | Irwin ... | 84 ... | 10 (11.9%) |

* Suppurative.

† Assumes deaths to have been amongst suppurative cases.

Under modern methods, therefore, whilst the mortality in clean cases is practically negligible, and whilst the results in suppurative cases will vary with the dexterity, technique, and sometimes the rapidity of the operator, as well as the subsequent care bestowed on the nursing of the patient, widespread and general improvement can only be attained by intelligent recognition on the part of the practitioner of those cases which are likely to go on to pus formation.

If, then, pus be the cause of death, the cause of pus is perforation of the appendix. In the present series perforation was present in 50 per cent. of the cases. Perforation cannot, I fear, be anticipated in every case. In two cases of the series, Nos. 2-3, it was the perforation which directly caused the symptoms for which the medical man was consulted, and speaking generally we shall meet from time to time cases in whom inflammatory changes have been going on without the knowledge of the patient. Such perforations, though of small size, are most sudden in onset. They compel attention and demand immediate surgical interference, and hence their death-rate is low. Not so the perforation of acute appendicular obstruction, which, after causing considerable pain at first, enters upon a semi-quiet stage only to perforate later. The perforation is extensive and ragged, the material extravasated is foul, virulently infective, and considerable in amount.

Investigation of the cases shows that no less than 28 of them required, or were thought by the practitioner to require, operation on the third day. These appeared to be progressing favourably until about 36 hours after the onset, when they seemed to get suddenly worse. There can be no doubt that this was due to perforation. The problem, therefore, is, How shall we best anticipate this grave complication? Not by blindly waiting and trusting to the fact that many cases recover without operation, but by teaching our students and practitioners the morbid anatomy of the obstructed gangrenous appendix, that it may be recognised by its history and its physical signs and symptoms, that it is never "a mild attack of appendicitis," but a grave and potentially fatal disease, demanding promptitude and careful handling if the patient's life is not to be placed in jeopardy.

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GIFT TO THE NORTHAMPTON GENERAL HOSPITAL.—Mr. G. T. Hawkins, of Northampton, has given £3000 towards the building and equipment of a pathological laboratory for Northampton General Hospital. It is hoped that the work of construction will commence almost immediately.

ROYAL SANITARY INSTITUTE.—Courses of lectures and demonstrations for the spring term, 1919, at the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W., commence next month. A course for sanitary officers will be given on Mondays, Wednesdays, and Fridays, from Feb. 17th to May 2nd, the fee for the first part, which will deal with sanitation generally, being £2 12s. 6d., and for the second part, which will deal with food inspection, £1 1s. The complete course is £3. On Mondays, Wednesdays, Fridays, and Saturdays (not consecutive) from Feb. 21st to May 2nd there will be a course of lectures for women health visitors, tuberculosis visitors, school nurses, and school teachers, a supplementary course for child-welfare workers beginning on Feb. 24th. The fee is £1 11s. 6d. in both cases, but the two courses may be taken together at an inclusive fee of £2 12s. 6d., 10s. 6d. of this being carried towards the examination fee. The lecture hour in each case is 6 P.M.

THE CONTROL OF THE UPPER FRAGMENT

IN HIGH FRACTURES OF FEMUR AND HUMERUS BY
A NEW FORM OF PELVIC-FEMUR SPLINT AND
ARM SPLINT.¹BY JOHN ROBERT LEE, M.D., B.S. MELB.,
F.R.C.S. EDIN.,MAJOR, R.A.M.C.; OFFICER IN CHARGE, SURGICAL DIVISION, FULHAM
MILITARY HOSPITAL, HAMMERSMITH, LONDON, W.

At Fulham Military Hospital, London, we have had many opportunities of treating fractured femurs and also of seeing the results of treatment in other hospitals, as shown by cases which have been transferred to us. The number of cases which come to amputation from sepsis or which join up in bad position with stiff joints is very great. For instance, during last June we had 20 fractured femurs sent over to us from France, where they had been in special hospitals from one to five months; of these, some were in fairly good position and not very septic, several of them were more or less united in bad position, and most of them had sequestra due to trauma and inefficient drainage. It is the fractures of the femur in its middle third that I wish especially to deal with. Ten of the 20 femur cases admitted in June were those of fractures in the upper

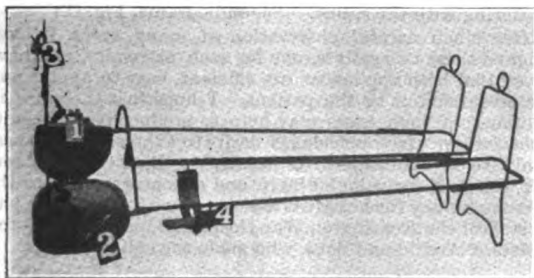


FIG. A.—Pelvic-femur splint.

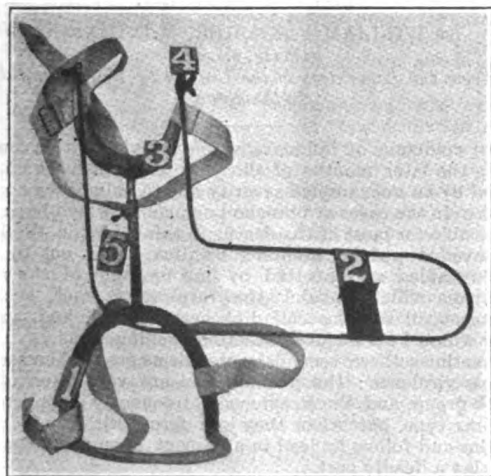


FIG. B.—Arm splint.

third; of these, 3 were in good position and only slightly septic, 2 were in fairly good position but septic, 5 were in bad position, and of these 3 were very septic. Therefore, 50 per cent. were in bad position and 50 per cent. were very septic. These results should be capable of improvement.

Fractures of upper third of femur.—The position or displacement of the fragments in fractures of the upper third of the femur, as a rule, is as follows: (1) The upper fragment is abducted and flexed by the glutei and ilio-psoas muscles; (2) the lower fragment is displaced backwards, upwards,

and inwards by the hamstrings, quadriceps and adductor muscles. The powerful adductor magnus being an exceedingly important factor, there is also some rotation. This deformity is typical; the main causes producing it are the direction of the fracturing force and the action of the muscle groups.

The essentials of correct treatment rest on an adequate consideration of the anatomical factors and the principles of

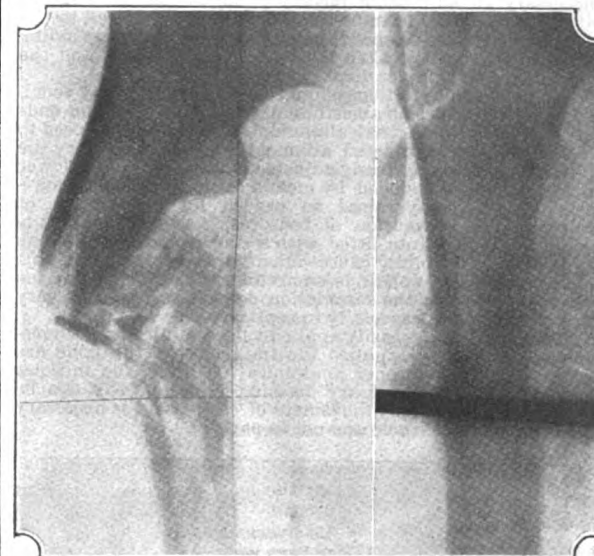


FIG. C.—Radiograms of fracture (compound) of right femur at upper third, with abduction of upper fragment. After application of pelvic-femur splint adduction and fixation of upper fragment with good alignment are seen to result.

surgery, the latter including arrest of hæmorrhage, establishment of efficient drainage, provision for antisepsis, general care of the patient, massage, &c.; I want, however, to draw special attention to the anatomical factors. The fragments should be brought into correct alignment, the muscle groups placed in a condition of physiological rest, and the limb securely fixed in order that there may be no movement of the fragments or spasm of muscles; at the same time any interference with the circulation of the limb should be avoided.

Hitherto it has been taught that in fractures of the upper third "the upper fragment, being short, cannot be controlled." Therefore attempts have been made to procure alignment by abducting the lower fragment. *This method is wrong in principle.* I have taken measurements of a great many men and find that the distance between the symphysis pubis and the adductor tubercle is on an average two inches greater in the abducted position than when the knees are side by side. Hence in the abducted position of the fractured limb the adductor group of muscles have a greatly increased pull and are in a condition of spasm instead of physiological rest. Therefore, although the two fragments are brought parallel to one another, an X ray examination in many cases reveals the fact that the upper end of the lower fragment has now moved upwards a distance of about two inches and takes up a position near the lesser trochanter. An amount of extension that can be applied with safety fails to correct the shortening. Unless the two ends of the bone were impacted what has been accomplished is increased overlapping of the fragments and not an elongation of the adductor muscles. It occurred to me that if the upper fragment could be controlled and the abduction overcome the fragments could be brought into proper alignment with the limb and the muscles in a nearly normal position.

Pelvic-femur splint.—With the above principles in view I designed a new appliance which I have called a pelvic-femur splint.

It consists of a grip with two pads (Fig. A, 1) which fit the pelvis; modified Thomas' frames for both lower extremities are hinged on to the pelvic grip (2). The pelvic grip can be adjusted to fit any pelvis comfortably and securely. The pelvis and upper part of the femur on each side are grasped by the pelvic pads. The abducted upper fragment can be controlled and adducted to its normal position quite easily. (See radiograms, Fig. C.) The amount of pressure required is regulated and the fragment kept in position by a fly nut

¹ Being part of a paper read at the Section of Surgery of the Royal Society of Medicine on Dec. 4th, 1918.

working on a screw (Fig. A, 3). Both limbs can be put up in the iron frames in the ordinary way. The upper fragment having been brought into proper position, the lower one can be placed in correct alignment by abducting or adducting, raising or lowering as required while on the splint, the latter working on hinges or joints (near 2, Fig. A). Any backward displacement can be corrected by manipulating the small wooden splint by means of screws (Fig. A, 4). Adequate extension can be applied. If much extension is found to be necessary an adjustable piece similar to that used in the arm splint (Fig. B) can be fitted from the pelvic pad to the axilla on each side; hence the upward thrust of the extending force will be partly taken by the axillæ and trunk and the pelvic calliper grip not displaced.

All these manipulations should be done on an X ray couch (if necessary under an anæsthetic) so as to see that the ends of the bone are in actual alignment, not merely supposed to be so. Having completed all manipulations necessary the binding screws are firmly adjusted. The pelvis and lower limbs can be suspended by means of pulleys on a frame—the patient's body raised as needed for convenience of nursing, the prevention of bedsores, &c. Many patients complain that splints fitted with a ring around the thigh as in a Thomas' splint, cause much discomfort. With this splint there are no bands encircling the limb; hence, no interference with the circulation occurs, which is a very important factor, especially in septic cases.

The splint can be easily applied with a minimum of movement. When it is applied the fragments of the bone are securely held in proper anatomical position; the muscles are at rest. All necessary dressings, nursing, &c., can be carried out, and if any movement of the patient is necessary he is moved as a whole and not in parts.

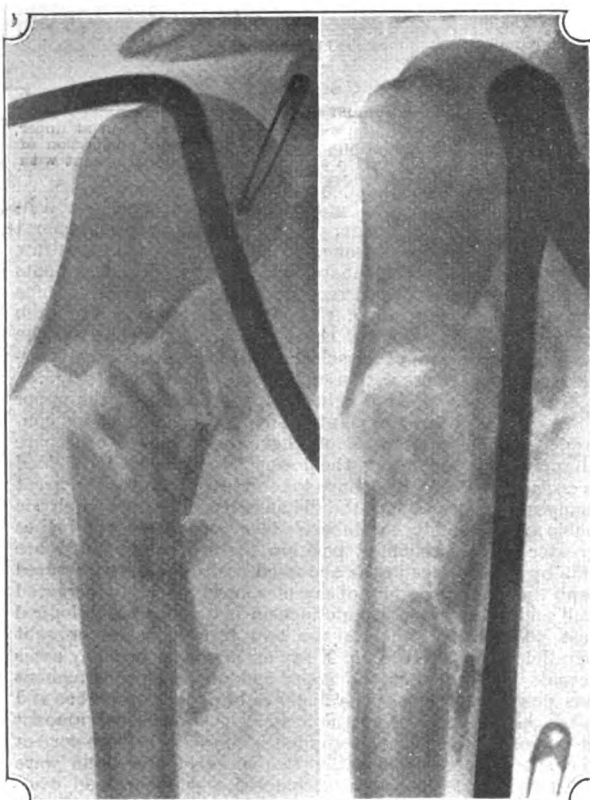


FIG. D.—G.S.W. of right arm, compound fracture, displacement, upper fragment abducted. After application of arm splint the fragments are shown in good alignment.

The iron leg portion of the splint can be raised at right angles to the operating table, and thus out of the way should any operative procedure be necessary, the upper fragment being perfectly controlled by the grip pad, the lower steadied by an assistant.

The splint is made double to ensure steadiness and to enable the patient to be moved easily. The final result is that the patient lies with the fractured thigh in its proper position comfortably beside the healthy limb. In all cases skiagrams are necessary—both antero-posterior and lateral—in order to show whether the fragments are actually in correct position.

The splint is useful in all fractures below the great trochanter where there is abduction of the upper fragment,

but its use is not limited to compound fractures of the femur. It would be of great value in treating fractured pelvis, intracapsular fractures, and anterior poliomyelitis to give rest to paralysed muscles.

Arm splint.—An efficient splint for the upper extremity should be firmly fixed to the patient's body so as to carry the limb and keep the fracture in proper position and at rest. Usually the splint hangs on the limb instead of supporting it.

The splint for the upper extremity which has been designed by me consists of two parts (Fig. B). One fits firmly on to the trunk (1); the other carries the limb (2). The upright trunk part is fitted to the hip with an adjustable piece which allows its upper forked end to be securely fitted into the axilla (3). This part is fastened round the body by two straps. To the upper end of the fork the part which carries the limb is attached by joints (4), which allows the arm to be abducted to any desired angle and retained there. The centre of movement passes through the head of the humerus. By releasing a set screw (5) on the tubular piece the hip portion can be turned round; the limb attachment is then turned completely over; hence the splint can be used for right or left limb equally effectively. The splint can be adjusted so as to support the shoulder in any desired position. The forearm can be placed in either the semi-prone or supine position. Provision is made for any necessary extension. When properly fitted the patient carries the upper extremity with the whole weight supported by the body; hence the limb is kept quite steady and at rest. Dressing of wounds, massage, &c., can be carried out without interfering with the splint. (See radiograms, Fig. D.)

After much careful observation of many cases I have designed these two splints, one for each extremity, and have proved that both appliances are efficient, easy to apply, and give great comfort to the patient. I hope that their use in treatment of such cases may help to produce better results in the future. In conclusion, I desire to express my warmest thanks to my colleagues, especially to Lieutenant-Colonel C. T. Parsons, for valuable help and encouragement; to Dr. Florence Stoney for her great assistance with the X rays; to the staff of the Kensington War Hospital Supply Depot; and to Messrs. Arnold and Sons, who made the splints for me.

MENINGOCOCCUS BRONCHO-PNEUMONIA IN INFLUENZA.

BY WILLIAM FLETCHER, M.D. CANTAB.,

CAPTAIN, R.A.M.C.

(From the Laboratory of the University War Hospital, Southampton.)

THE epidemic of influenza which has visited this country during the later months of the year 1918 has been characterised by an unexampled severity due to pulmonary complications. In the cases of broncho-pneumonia, which have been responsible for most of the deaths in this epidemic, the lungs are invaded not by Pfeiffer's bacillus alone, but by that bacillus aided and abetted by one or other of the many organisms which inhabit the respiratory tract, such as pneumococci, streptococci, diphtheria bacilli, and, in the cases which I am about to describe, meningococci.

Sometimes these secondary organisms are, by themselves, of low virulence; the pneumococci are very often of the fourth group, and the streptococci frequently belong to the *viridans* type, but when they join forces with the influenza bacillus and follow its lead in a descent upon the lungs they can play a deadly part.

Bacteriological Findings.

Between Sept. 25th and Nov. 23rd, 1918, cultures were made, after death, from the lungs and from the heart's blood of 36 American soldiers who had died from broncho-pneumonia. These men, for the most part, had been taken ill with symptoms of influenza a week or 10 days before admission to this hospital, while they were on board transports crossing the Atlantic.

In films prepared from the lungs of some of them the only organisms to be seen were Gram-negative diplococci in enormous numbers, the majority of them lying within polynuclear cells. In one or two instances they were so numerous that there was hardly a cell that did not contain some. Plate cultures were made post mortem from the lungs of all the cases; numerous colonies of Gram-negative cocci were obtained in 11 of the 36, and in three instances

they were grown from the heart's blood as well. Subcultures of these cocci from seven of the cases were examined at the Central C.S. Fever Laboratory, with the result that six were found to be Type II. meningococci, while the seventh conformed to Type I. The other four strains were, unfortunately, not kept for further examination, but as, with one exception, they were derived from cases of influenza which occurred on the same transport as the other seven, and as the appearance of the films prepared from the lungs was the same, it is probable that they, too, were meningococci.

In all these 11 cases Pfeiffer's bacillus was present in association with the meningococcus; it was not always found in the films, but it always grew on plate cultures made from the lungs. In two instances pneumococci were also present; in one case streptococci and in another both pneumococci and streptococci were found.

Clinical Features: Condition of Lungs Post Mortem.

The duration of illness from the beginning of the influenza to the end in death was from 11 to 16 days, except in one instance, where the patient lived for 24 days from the date of onset. The men did not reach this hospital until they had been ill for some time, and there are no available clinical records of the course of the disease in its early part. All of them, except one who came from a hospital in France, had been attacked by influenza while on board the transport, and when they were admitted here about a week later they were very ill indeed. Four of them died within 48 hours of admission, 4 within a week, and 3 within a fortnight.

There were no special features by which these meningococcus broncho-pneumonias could be distinguished clinically from the other cases in this ship epidemic which were due to a combined infection with Pfeiffer's bacillus and pneumococci or streptococci, except that in the meningococcus infection there was possibly a greater tendency to hæmoptysis. In one or two of the cases which were seen in the earlier stages the sputum was rusty and tenacious, but for the most part it was nummular, airless pus mixed with dark blood.

In several of the cases an even high temperature was gradually coming down by lysis during the first few days after admission, when it suddenly rose again as though some fresh bacterial invasion had occurred, and instead of remaining steady there were wide oscillations between 99° F. in the morning and 104° or 105° at night. The pulse-rate in these fatal cases increased to 120 or more, and the respirations to about 60. It is noteworthy that in the case of one man, from whose heart and lungs meningococci of Type II. were isolated, the skin was a bright yellow colour for several days before he died. None of the patients showed any signs of meningitis before death took place, nor was any evidence of it seen afterwards.

In every case confluent broncho-pneumonia was found post mortem, producing large areas of consolidation, and both lungs were affected, though generally the process was more advanced on one side than on the other. In two instances red hæmorrhagic patches beneath the pleura were a striking feature, in four the pleura was covered with recent lymph, and in two there was turbid fluid in the pleural cavity.

In some cases the broncho-pneumonic patches coalesced to such an extent that whole lobes were solid and airless, while in others the patches of consolidation remained separate, so that the affected lung felt like a bag of plums. In every case when pressure was applied by squeezing the lung, thick yellow pus oozed from the blocked bronchioles. In one instance there was an abscess with ragged walls at the base of the right lung, which contained a thick, dark, red fluid full of Gram-negative cocci.

Other Observations.

Shortly after the death of these men a British soldier suffering from bronchitis was admitted from France, where he had been under treatment in an American hospital. He had been taken ill suddenly with giddiness and pains in the back 15 days before. His temperature was of the same type as that of the American soldiers who died from meningococcus broncho-pneumonia, swinging from 98° or 99° in the morning to 103° at night, but his pulse was not above 100 and his respirations were never more than 40 to the minute. Films prepared from his sputum, which was frothy and purulent, contained large numbers of Gram-negative cocci, and a plate inoculated with it gave a profuse growth of meningococci of Type IV. and a few staphylococci. This patient's temperature came down by lysis and was normal on the twenty-fifth day.

Lieutenant-Colonel M. H. Gordon, to whom I am greatly indebted for carrying out the agglutination tests on these meningococci, has very kindly drawn my attention to a paper by Jacobitz,¹ who investigated an outbreak of disease which occurred in a Jäger battalion at Colmar during February, 1906. He found two men suffering from typical cerebro-spinal meningitis without complications, three cases of meningitis associated with meningococcus pneumonia, and one case in which there was meningococcus pneumonia without symptoms of meningitis; this last case ended by crisis and recovery. In addition, he observed four cases of bronchial catarrh (with meningococci in the sputum) without any symptoms of meningitis, all of whom recovered. He does not appear to have found Pfeiffer's bacillus in any of his patients.

Summary.

1. In the post-mortem examination of 36 men who had died from broncho-pneumonia following influenza, Gram-negative cocci were the predominant organisms found in the lungs of 11 cases.

2. All the men, with one exception, had been taken ill on board the same transport.

3. In six cases these Gram-negative cocci were Type II. meningococci and in one case they belonged to Type I. In four instances the cocci were not tested by agglutination.

4. In each of the 11 cases Pfeiffer's bacillus was found in symbiosis with the Gram-negative cocci.

5. The meningococcus, like other "respiratory" organisms, may, when it occurs in conjunction with Pfeiffer's bacillus, produce a fatal broncho-pneumonia.

APPARENT IMMUNITY FROM INFLUENZA AT A PUBLIC SCHOOL.

By G. E. FRIEND, M.R.C.S., L.R.C.P.,

MEDICAL OFFICER, CHRIST'S HOSPITAL SCHOOL, WEST HORSHAM.

IN view of the fact that certain statements have appeared in the public press in reference to the absence of cases of influenza among the 800 odd boys at Christ's Hospital School, West Horsham—which statements were not entirely accurate—it is possible that some authentic account of the local conditions may be of interest.

Incidence in Summer and Winter Terms.

The summer term, which had shown a good health return, ended on July 25th. On Saturday, July 20th, the school cricket XI. went to Brighton to play a match. As a sequel to this visit five of the team became infected with influenza and were admitted to the school infirmary on Sunday morning with 3 other boys who were not in the team but came from the same houses as those who were, and had obviously been infected from them. Only 2 cases were admitted on July 22nd, and 7 on Tuesday, 23rd, 18 on Wednesday, 24th, and 4 cases on the morning of the 25th. There were thus 39 cases occurring as a result of this exposure. Nearly all these boys were from the same houses as the first five. There were during the previous ten days 21 cases of mild influenza occurring in various houses of the 16 that comprise the school, but they were sporadic and milder in type than the 39 later cases. None of these 60 cases were severe, and there was no case with any complication in the school.

Several cases (probably about 30) occurred after the boys arrived home among those who must have been ill on the morning of leaving but who did not report. Every term all the boys are inspected by me on the afternoon of the day before going home, but as they start at 6 A.M. in the morning it is impossible to inspect them nearer the time of departure.

During the holidays the infirmary was washed down and the mattresses and wards used for influenza cases were disinfected. I did not, however, think it necessary to carry out disinfection on a larger scale.

The winter term began on Sept. 13th and ended on Dec. 18th. During the whole term the medical illness was less than it had been in any term since 1898. The total number of medical cases admitted was 115 for 13 weeks. Of these, 36 were "chills"—i.e., cases of illness with raised

¹ Der Diplococcus Meningitidis Cerebrospinalis als Erreger von Erkrankungen der Lunge und Bronchien, Jacobitz, Zeit. f. Hyg., 1907, lvi.

temperatures of 24 hours or more without definite physical signs. The cases occurred sporadically among the 16 houses, and there was nothing in their distribution or incidence to suggest that they were anything more than the ordinary so-called "chill."

Preventive Measures.

After the experience of the summer term case was naturally anxious, and at the beginning of the winter term I advised the Headmaster to stop all leave of absence and to keep the boys strictly in bounds. The school is self-contained and lies in a ring fence. Walks outside were allowed, but the town, $2\frac{1}{2}$ miles away, and all the houses off the school estate were put out of bounds. It was not found possible to keep visitors away, and swarms of these arrived every Wednesday and Saturday throughout the term, many usually staying over the week-end, nor was it possible to stop all leave of absence. There was a further exposure to infection via non-resident masters and servants, the latter especially being possible carriers. These are supposed to report to me in the event of any illness occurring in their homes, and when possible I suspend them coming into contact with the school, but I do not think this is a very certain check. As an attempt to adjust actual conditions to the reduced diet values which have recently pertained we had previously increased the amount of sleep by one hour and decreased the amount of work and play, and these measures were continued in force. I also introduced the nasal drill as described by Dr. Isabel Ormiston in THE LANCET of August 24th, 1918. The method used is substantially as described by her, and the boys do the drill twice daily—on rising in the morning and before going to bed at night. The nose-blowing is performed six times to the word of command, which is given by the monitors, who act as pupil instructors of physical training, and form the first exercise at every P.T. drill, which at present is done in the dormitories after washing in the morning. (I am aware that this is not the most suitable time, but at present it has not been found possible to give another time for P.T., and it is not done on an empty stomach, as the boys are given two wheaten biscuits each on rising.)

Dr. K. L. Hunt, bacteriologist to St. George's Hospital, suggested to me the possibility of vaccine prophylaxis—and after talking it over with him we decided to give a single small dose of polyvalent influenza vaccine. We were averse to using a mixed vaccine, because we regard cases of pneumonia and streptococcal infections as "complications" occurring, in the majority of cases, after the onset of an influenza infection. In some cases, it is true, pneumonia is present when one first sees the case, but that is, we think, to be expected in a certain percentage of cases. Also, as the inoculation of a large school might, if not successful, have occasioned considerable comment, I preferred what seemed to me the lesser risk of an unmixed vaccine. We decided to give a 70 million dose to all boys over 14 and 30 million to those under 14. A post-card was sent to every boy's parent or guardian informing them that their boy would be inoculated as a preventive measure unless they wrote to me that they objected.

Account of the Prophylactic Vaccination.

I inoculated the boys on Oct. 30th (approximately at half term).

306 boys received 70 million. | 327 boys received 30 million.

Total: 633 boys inoculated.

39 boys' parents objected to inoculation.

128 boys I considered unsuitable for inoculation.

19 boys were absent ill.

Total: 186 boys not inoculated.

Approximately 77 per cent. of the school were inoculated. In addition 34 of the staff received 70 million.

The proceeding was, of course, voluntary as regards the staff and their families, but the response to the invitation was poor, as approximately 13 per cent. only of the staff and families were inoculated. Every precaution was taken. Temperatures were taken morning and evening the day before, the day of, and three days following, the inoculation. All games and O.T.C. parades were stopped for the same period, and only very moderate exercise allowed until the sixth day after.

All the boys were inoculated the same day by me, with the assistance of two nurses, one charting particulars, the other preparing the skin. The injection was made with a 5 c.cm.

Record syringe, holding 10 $\frac{1}{2}$ c.cm. doses, and given in the left forearm on the extensor surface just below the elbow. The first 100 were swabbed with ether, but after that, owing to the fumes, tinct. iodi was used.

The boys marched to the infirmary by houses, according to a time table previously circulated, stripped coats in my outpatient room, and then came through an inner room where the injection was given. Then returned to the first room and waited until the whole 50 boys in the house had been inoculated or rejected. In this way any bleeding, faintness, &c., was known of and seen to.

The needle used was dipped into boiling water between each puncture, and the syringe refilled every 10 punctures. The vaccine was made for me by Dr. Hunt from a series of cultures of Pfeiffer's bacillus obtained at St. George's Hospital in the year's epidemics, and was put up in bottles of 100 doses, the dose in each case being $\frac{1}{2}$ c.cm. of vaccine, the labels for the bottles containing the 70 and 30 million doses being different. In this way I was able to get through the whole 633 inoculations and see also the 167 rejected. Every boy was seen and questioned by me as to fitness before inoculation. Each house of 50 boys came up in charge of the head boy, who brought a list showing the temperature of the boys for that morning and the previous evening.

The temperatures were taken in each house by the house matrons, assisted by the masters or senior boys, and this work was supervised during the day by a nurse who was specially employed for this purpose and who afterwards charted the complete records. Possibly as a result of these precautions there were no cases of severe reaction.

The boys were all seen again three days after the inoculation (when they attended for the mid-term weighing) and were questioned by the nurse in my presence as to reaction with the following result:—

| Dose in millions | Local. | | Focal. | | General. | | Inoculated. |
|------------------------|--------|---------|--------------|-------|----------|------------------|-------------|
| | Marked | Slight. | Sore throat. | Cold. | Malaise | Diarrhoea. | |
| 70 | 0 | 4 | 10 | 1 | 19 | 0 | 306 |
| 30 | 0 | 6 | 9 | 4 | 29 | 1 | 327 |
| Total... | 0 | 10 | 19 | 5 | 48 | 1 (G. total, 83) | 633 |

In no case was a rise in temperature recorded. Of the 83 only one boy was sufficiently incommode to report at the infirmary, and he was one who had light brawny swelling round the site of puncture, which subsided after the application of a couple of cold-water compresses. Of the 48 cases of malaise probably half can be discounted, if not more, as no one had reported, and the majority of the histories were given in response to leading questions by the nurse. If all are included the number of reactions equal 13 per cent.

The Immunity from Disease in the Winter Term.

There were during the term no cases of definite influenza among the boys except one—a boy who had been inoculated with a 30-million dose on Oct. 30th. He went home to attend his mother's funeral on Nov. 20th, she having died from influenza. On his return on Nov. 24th he reported to me according to the school rule, and I kept him isolated. The same evening he had a slight rise of temperature, with headache and pain in the back; the next day coryza and cough—no other signs—and the temperature became normal in three days. Probably this was mild influenza. In regard to the rest, there were during the term 36 cases of "chill," as already mentioned. These were cases of raised temperature, malaise, slight sore-throat, &c., without definite physical signs admitting of an exact diagnosis. They all recovered with a day or two in bed on a light diet.

Influenza was from September on very prevalent in Horsham and in all the surrounding villages, and from Oct. 14th onwards there were cases among the staff living in the school precincts. On Oct. 14th a maid from the Preparation School House went down with influenza, and on the 15th and 18th a second and third went down. Two of these developed pneumonia the second day of disease. A fourth maid from the same house went home on the 19th quite well and went down with influenza at home that afternoon. She afterwards developed pneumonia. On the 23rd and 26th two maids in another house developed mild influenza. All these cases were immediately isolated in the infirmary, and there was no further spread in the school. On Oct. 24th a

master's wife and on Nov. 4th a second master's wife, living at the opposite end of the avenue, developed definite influenza. They were both isolated, and no further spread occurred. About 10 other cases occurred in various houses on the estate, but not so immediately in contact with the school proper. All these cases recovered, and except the 3 pneumonias there were no complications. None of these were inoculated, and of these cases 6 only occurred after the school had been inoculated.

As already stated, the total number of medical cases treated in the school during the term was considerably lower than the number for any other term, winter or summer, since 1898, before which date the records have not been tabulated. The majority of these were definite cases of bronchitis, pleurisy, gastritis, &c., but 36 were perforce classified as "chill." It may be argued that these were cases of modified influenza. Unfortunately, bacteriological examination was not practicable.

Against the diagnosis of influenza are the absence of definite symptoms, the short duration of illness in the majority of cases (the average time in hospital of the 36 is just under three days), and the complete absence of after-effects. In favour of the diagnosis is the known contact with many potential carriers and close proximity to several definite cases. Twelve of the 36 occurred before Oct. 30th, and 24 occurred after Oct. 30th. Of the 24 occurring after Oct. 30th, 7 were among the uninoculated = 4.2 per cent., and 17 were among the inoculated = 2.6 per cent. (2 with 70, 15 with 30 million).

The view has been put forward that the administration of any vaccine produces an increase of resistance to any organisms in the individual. 77.2 per cent. of the school were inoculated on Oct. 30th. Sixty-four medical cases of all kinds were admitted to the infirmary after that date; of these, 41 had been inoculated = 6 per cent.; 23 were uninoculated = 13 per cent.

The statement was made in the Press that I had instituted a routine nasal douche of potassium permanganate. This is incorrect. It would have been impossible to arrange to douche 800 noses by trained help, and I should regard such a proceeding, if left to the unaided resources of the boys, as a most unsafe method. I think the fact that inoculation was performed acted as a great mental factor. It is possible that the cases labelled chills were in fact cases of modified influenza, though, in my opinion, the clinical evidence is against this.

The chief factors in what is an extraordinary immunity appear to be—(a) the physical training, which though it has been seriously undertaken for six months only, has already produced a marked improvement in physique. (b) The nasal drill, which perhaps is the most important of all. (c) The fact that for the past three months the caloric value of the school diet has reached practically the pre-war value of 3000 calories per boy per diem—for the first time since 1916. (d) The effect of inoculation, therapeutic and moral.

It will be interesting to know when the school reassembles how many boys have contracted influenza, or have been definitely exposed to it during the holidays.

Note by Dr. E. L. HUNT.

The following note as to particulars of the preparation of the vaccine has been kindly added by Dr. Hunt.

The vaccine used was a polyvalent one, containing only the influenza bacillus, obtained from different sources.

The organisms used were as follows:—

- | | | | |
|-----|-----------------------|---------------------|--------------------|
| (a) | <i>Bac. influenza</i> | obtained from nose, | October, 1918. |
| (b) | " | " | sputum, June, " |
| (c) | " | " | nose, October, " |
| (d) | " | " | sputum, July, " |
| (e) | " | " | " September, 1918. |

These organisms from when first isolated had been kept going on blood-agar medium at 37° C.

The medium used for the vaccine tubes was rabbit's blood agar, made by adding some 5 drops of the blood, freshly obtained under aseptic conditions, to 4 c.cm. of melted lemco-peptone-salt-agar at about 60° C., the tubes being mixed, slanted, and allowed to cool.

Ten tubes were inoculated (Oct. 26th, 1918) from each of the 5 organisms, respectively (50 tubes) and grown for 48 hours at 37° C.

The vaccine was heated in a water-bath at 55° C. for 30 minutes. Sufficient vaccine was thus obtained to yield—

5 × 50 c.cm. bottles, $\frac{1}{2}$ c.cm. = 70 million;
5 × 50 c.cm. " $\frac{1}{4}$ c.cm. = 30 "

Clinical Notes : MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF PERICARDIOTOMY.

By T. P. NOBLE, M.D. EDIN.,

CAPTAIN, R.A.M.C.;

AND

A. B. VINE, M.R.C.S., L.R.C.P. LOND.,

CAPTAIN, R.A.M.C.

IN the following case pericardiotomy was performed on the twelfth day after passage of a rifle bullet through the chest, with recovery of the patient.

The patient, a lieutenant in the Lancashire Fusiliers, was wounded on April 11th, 1918, by a rifle bullet which entered in the third interspace $\frac{1}{2}$ in. internal to the nipple line on the left side, and had its exit $1\frac{1}{2}$ in. to the left of the mid-line behind, on a level with the seventh dorsal spine. His first sensation when he was hit was a burning pain behind; then he fell, and all power seemed to leave him. A few minutes later he was able to run 50 yards with the aid of a man supporting him on either side. He did not lose consciousness, but had considerable dyspnoea. Admitted to No. — C.C.S. (April 11th). The notes on his field medical card show the following: "Entrance and exit wound left chest, swelling in the left pectoral region, and signs of a small hæmothorax."

Admitted to No. — Stationary Hospital on April 14th. Considerable difficulty in breathing, and had to sit almost upright. P. 90, R. 30, T. 100.6° F. E. and E. wound as noted. (See Figure.)

The entrance wound was merely a puncture with a rather larger exit one. Cardiac dullness: Right side, 1 in. to right of sternum; left side, to the nipple line and upwards to the lower edge of the second rib. Pericardial friction heard to the right of the sternum and near the apex. Posteriorly there was dullness up to the level of the exit wound, breath sounds heard all over, but weak. April 16th: T. varies from 100° to 102°. Friction more marked and audible all over the præcordia. Dyspnoea continues and cough troublesome. April 20th: Cardiac dullness slightly increased, friction persists, dyspnoea more marked, cough very distressing. P. 92, T. 102.6°. Seen by Major-General Sir John Rose Bradford, who advised exploration of the chest and, if necessary, pericardiotomy. April 21st: Condition worse, cough, dyspnoea and pulse-rate all increasing. An X ray photograph which was taken showed the pericardium distended with fluid.

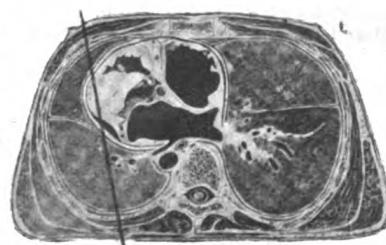
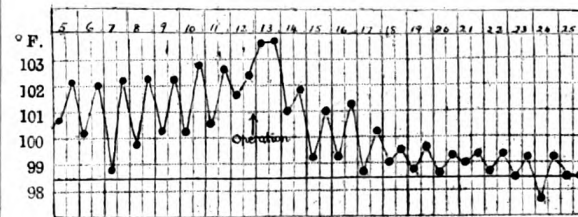


Plate from Johnson Symington's "Atlas of Topographical Anatomy," indicating the probable path of the bullet, which appears to have punctured the pericardium and grooved the muscular wall of the heart.



Operation.—General anaesthesia with chloroform and ether, with preliminary morphia and atropine hypodermically. Twelve ounces of clear fluid were withdrawn from the left pleural sac, which was proved to be sterile. An incision was now made along the fifth rib and cartilage from the mid-line to the nipple-line, the fifth costal cartilage was resected, the fibres of the triangularis sterni muscle were separated, and the internal mammary artery drawn inwards. The

pericardium was now picked up and a vertical incision was made in it. Very little fluid at first escaped, but when the finger was insinuated between the right auricle and the pericardium and between the left ventricle and the pericardium cloudy fluid escaped in quantity, which on bacteriological examination was found to contain a short streptococcus. Glove drains were inserted to the right and left inside the pericardium and the wound was closed.

April 23rd: Breathing and cough much easier; drains removed. Pulse and temperature now gradually fell and the wound healed by first intention. Four weeks later he was evacuated to England. The cough and dyspnoea had disappeared, the cardiac dullness was much less, and there was no friction.

Subsequent inquiry two months later showed that his improvement was maintained.

THE MOLYBDENO-TUNGSTEN ARC IN THE TREATMENT OF VARIOUS SUPPURATIVE LESIONS.

(As used at a Divisional Rest Station and a Stationary Hospital, Italian E.F.)

By B. MICHELL YOUNG, M.R.C.S., L.R.C.P., D.P.H.,
CAPTAIN, R.A.M.C.(T.)

THE very numerous cases of old wounds, ulcers of various parts of the body, carbuncles, inflammations of the cutaneous tissues, and such like, have presented many difficulties to obtain rapid healing. Many methods have been employed with more or less success to lessen the period during which the man is incapacitated from duty. In March, 1917, I first used the molybdeno-tungsten arc on skin lesions, and suggested that it should be employed for the treatment of this class of case. The lamp was erected first at the divisional rest station, the necessary current being obtained from a repair-motor lorry's engine situated some 400 yards away. This was satisfactory. Afterwards it was connected to the town-supply at the stationary hospital.

The cases selected for treatment were chiefly those which were of considerable duration and which showed little or no improvement obtained by previous methods of treatment. The exposure given was generally three minutes at a distance of 50 cm. from the arc. The dressings used were practically in all cases of gauze damped with sterile water; in a few normal saline was used. This was adopted as it was desirable to eliminate any cause of improvement, or the reverse, other than the effects of the ultra-violet rays produced by this arc. I am basing my remarks on my own experiences and on a series of cases treated by Lieutenant-Colonel Wells, to whom I am indebted for kindly forwarding to me his notes and observations. In considering the various effects and non-effects produced, the cases tend to group themselves into acute lesions, stationary or inactive lesions, and chronic. In the acute lesions, frost-bite, carbuncles, large areas of inflamed and ulcerated skin responded readily. A series of frost-bites especially, with loss of tissue, afforded effective comparison, as only one limb was exposed to the light, while the other was treated with the usual methods. In every case the light caused prompt healing in about eight days, while the other remained unhealed. In 38 cases of generalised sores many were healed more speedily by this method of treatment.

Ulcers of heels and toes require relatively more exposures according to the length of time they have acquired their indolent condition. But once the effect is produced they steadily progress in the process of repair. Occasionally a case is met which refuses to respond. For this I can advance no reason; one such occurred in this series—possibly specific.

Taking the whole series, the exposure of three minutes is sufficient in the first group and good results were obtained, but this should be increased even to causing erythema of the surrounding tissues, until evidence of activity in the sores is produced in those obstinate cases, and possibly more rapidity of healing would be obtained. Cases of bubo which had been incised were treated from the outset with daily exposures of three minutes, and each healed in eight days, leaving a narrow healthy linear scar, comparing favourably with cases treated in the usual way; and my experience shows that, speaking generally, there is an absence of thickening and puckering in cases so treated.

Some patients develop an erythema in the surrounding skin (especially those of the fair type) in response to the

light, but increase of distance or interposition of the quartz globe neutralises this effect. The skin soon becomes tolerant, when full exposures may be given.

The lamp now employed is known as the "meridian" automatic feed arc fitted with the new molybdeno-tungsten electrodes. It is connected in the usual manner with the ordinary house supply, and is a suitable contrivance for all voltages above 100 volts, both direct and alternating current. The observations which these cases afford lead one to the opinion that this method of treatment is useful for shortening the incapacity for duty.

A PLASTIC VOCAL CORD.

By FERRIS N. SMITH, B.A., M.D. MICHIGAN,
HON. CAPTAIN, R.A.M.C.

THE following case is reported because of the unusual possibilities which it suggests at this time, when many cases of traumatic aphonia are added to the usual list of such cases resulting from disease. The technique was quite original; no similar procedure has been found or suggested in the literature. The patient is the secretary-manager of a large home for aged Dutch people, and was in excellent health when last heard from in June, 1918.

J. C. H., aged 62, came for examination in January, 1917, on account of rapid loss of voice, some referred pain radiating to the right ear, and slight loss of weight. He gave a history of removal of a small mass from the right vocal cord and cauterisation three years previously. Inspection revealed a nodular, rough mass about the size of a split pea at the mid-portion of the free margin of the right true cord; this prevented apposition of the cords, causing the loss of voice. A small specimen for examination was removed through the laryngoscope. The pathologist reported "squamous-celled carcinoma."

In view of the previous history and findings a radical operation—hemilaryngectomy—was indicated, but on account of the man's occupation, which necessitated the retention of some speaking voice, I was loath to follow this procedure. The posterior end of the cord with its arytenoid attachment was apparently free from infiltration, and offered a foundation for the procedure which was carried out. There was a great deal to gain and very little to lose in the effort to reconstruct this vocal cord before resorting to the radical procedure. Further, any healthy mass of tissue which could be put in the cadaveric position of a vocal cord would furnish an abutment for the functioning cord and ensure spoken voice. The functioning arytenoid offered hope of some motion.

With the above considerations the following operation was conceived and executed in two stages at the Blodgett Memorial Hospital, Grand Rapids, Michigan, in February, 1917:—

Stage 1 consisted in the dissection and packing of neck structure about the larynx to produce an inflammatory barrier against infection of the deep planes of the neck after opening the airway and preparing the distal end of a flap to imitate the form of a vocal cord. This was done by making two short incisions to outline the lateral borders, dissecting the skin free from underlying tissues, planting a small piece of cartilage, and suturing a tuck or fold in the skin to include this cartilage. The crest of this fold was three-eighths of an inch above the normal skin level. The balance of the flap was not dissected until the second stage of the operation.

At the second stage a laryngotomy was performed, and the anterior three-fourths of the cord, with all soft parts in a wide area extending down to the thyroid cartilage, was removed. The skin flap, with a broad base in the supra-scapular region of the right neck and its prepared distal end just above the right nipple, was dissected. The distal end was trimmed to fit in the denuded area of the larynx in such a manner that the fold containing cartilage assumed the level of the former cord. It was sutured to the cord stump on the arytenoid and border soft parts with horse-hair. A tracheotomy-tube was inserted through the upper two tracheal rings and the larynx packed with bismuth paste gauze. The larynx was held slightly open with a Jansen mastoid retractor. The skin opening of the neck and chest was closed by undermining and sliding the skin.

The patient was placed in a bed which was considerably elevated at the foot. He was fed with a gastric tube. The skin flap was covered with warm, constantly changed, boric compresses, and the larynx was dressed twice daily.

On the eighth day the mid-portion of the pedicle of the flap showed signs of withering. This was resected on the ninth day, part of the base being returned to the neck. A small part of the inferior border of the larynx implant

sloughed, but this was not in a position to vitiate the result. The tracheal tube was withdrawn at this time and the larynx and neck closed, excepting the tube tract, which was lightly packed. Subsequent recovery, except for a mild bronchitis, was uneventful.

The patient had a hoarse, whispering voice immediately upon closure of the larynx. The voice quality constantly improved with the disappearance of the local reaction until it was functionally excellent, only a slight huskiness remaining.

Several improvements in technique have occurred to me since seeing the plastic work of Major H. D. Gillies at Queen's Hospital, Farnham, Sidcup. His method of tubing a long pedicle by suturing its raw edges would undoubtedly prevent the gangrene which occurred in my flap, and leave a clean, healed neck to deal with at the time of the major procedure. The distal end of the flap should be completely outlined by skin incision and resutured in place to increase its blood-supply, and the cord accurately reproduced, even to a thin edge, by shaping a piece of costal cartilage instead of using the thin septal cartilage. This should be done in the first stage.

The method is applicable to cases of hemilaryngectomy, either surgical or traumatic, if three stages are employed, the second stage to consist in removal of the diseased or scarred portion of the larynx and lining the deficiency with skin, leaving for the third stage a shaped cartilage implant to give stability to the larynx box and an abutment for the functioning cord.

Medical Societies.

ROYAL INSTITUTE OF PUBLIC HEALTH.

Discussion on the Prevention and Arrest of Venereal Disease in the Army.

A SPECIAL conference was held on Jan. 8th.

Lord SYDENHAM, chairman of the National Council for Combating Venereal Diseases, who presided, said that medical science in all its branches had been powerfully stimulated by the war, and victory had been gained over many of those diseases which used to cripple armies in the past. We understood now better than ever before that medical science and sound administration must always go hand-in-hand, and together could produce an immense improvement in public health. Public health and the happiness of the people went together. In so far as venereal disease could be arrested in the army it must be an immense gain and protection to the civilian population. During the war there had been an increase of infection among that population which would increase the risks to demobilised men.

The Policy of Silence.

Professor J. G. ADAMI, Colonel, C.A.M.C., read a paper opening a discussion on the Prevention and Arrest of Venereal Disease in the Army. He said that the performance of a physiological function which the individual in his heart of hearts knew to be in itself natural and desirable had to be regarded and taught as contrary to good morals. We found ourselves torn asunder between Peter and Paul; the Peter that is within us teaching us that what God has given us is clean and is to be enjoyed; the Paul, that woman is a snare and that even a bishop should have but one wife—and scarcely that. And as youth was largely irresponsible and the sense of social duty a plant of slow growth, which in some throughout life was choked by the weeds of personal predilection, it had followed that the whole matter of sexual conduct had for generations been surrounded with an atmosphere of insincerity, not to say hypocrisy. The "dead hand" of training began in early childhood, whereby we were taught to regard the open discussion of sexual matters as taboo; and there was the "dead hand" of schoolboy "form," according to which public acknowledgment of one's standing in relationship to moral matters, save on the part of those who had donned the cloth and become professional moralists, branded one as either a prig or a humbug. Happily, we were passing out of this phase.

What this policy of silence had cost the country and the Army during the last four years was awful to contemplate.

Before the war the annual reports of the Director-General had warned the Government as to the prevalence of venereal disease in the Army; a quarter of all admissions to hospital were due to this cause, but, with the war, no steps had been taken to render the regulations against harlotry more rigid. Our men had been in the venereal hospitals not by companies but by battalions. Each case had meant two months and more on the sick list, and weeks and months before the individual could be restored to full vigour at the front, if, indeed, there was not left a legacy of rheumatism, eye disease, and enfeebled general health.

The Position during the War.

When in the autumn of 1914 the first Canadian contingent arrived upon Salisbury Plain it was found that the Common Law of England and the Military Law were equally impotent to cope with the condition of affairs revealed. Harlotry in England seemed to be a protected but not a controlled profession. This, however, was also largely true of Canada, but the Canadian authorities did expect that in England in war time they would get willing help from local and London authorities in protecting the soldier. Of help there was little. Each week-end there poured into Salisbury Plain from London from 80 to 100 loose women, and it was not until under the Defence of the Realm Act in 1916 that the naval and military authorities in one area, where there had been a large outbreak of venereal disease, were empowered to transport out of that area those directly or indirectly concerned in the profession of prostitution.

He was convinced that the policy of frank dealing and open speaking on the subject was the only one that would improve conditions. Even at this late hour he begged the National Council for Combating Venereal Disease to influence the Government to publish a statement regarding the venereal situation in the Army in successive years of the war, in the different regions—at home, France, Mesopotamia, and the like—so that the country might know the extent of the trouble as it affected the Army, and, simultaneously, to obtain powers to make an investigation in selected areas or classes of the population into the frequency of either syphilis or venereal diseases in general in those areas or classes. Let the situation be known and faced. Had the medical profession, the National Council, and the Government spoken out at the beginning of the war the well-being and happiness of the country and the conditions of our troops would to-day have been very different from what it is. In 1912, before the war, the Surgeon-General at Washington had published outspoken regulations directing all soldiers returning to camp to state whether they had exposed themselves to the possibility of venereal infection and detailing the early preventive treatment to be given to those who had been exposed. This he (Colonel Adami) had reported upon to the War Office, but the "dead hand" had prevented its adoption for close on two years.

Preventive Measures and their Results.

With regard to the methods in vogue in the overseas military forces of Canada it had been found in practice that there was no one procedure which was effective in arresting venereal disease in the army; it was necessary to employ a combination. The Director-General had put into force all the methods save one (court martial)—education, warning, recreation, diversion, protection, isolation, prophylaxis, and penalties.

With regard to early treatment every Canadian orderly medical room in England was an early treatment centre, open day and night, with trained N.C.O.'s to supervise and see that the soldier carried out fully the instructions given. For those on leave in London there were open day and night two early treatment centres, at Southampton-street and at Victoria, and another treatment was given on their return to their units. The Dominions worked together, and if no Canadian centre was open the men could go to an Australian or New Zealand centre. The Canadian authorities in their talks to the men on parade made a point of emphasising that neither prophylactic nor early treatment assured absolute immunity to venereal infection. Experience had shown that even under expert supervision no procedure was free from occasional failure. The Canadian authorities firmly believed that if the Army and the populace in general were advised that absolute deterrents existed when this was not the case, there

was a possible danger of their employment leading, not to diminution, but positive increase in the spread of venereal disease. This had actually happened in Germany.

One set of statistics alone, he thought, would eloquently show the effects of the campaign undertaken by the Director-General through Lieutenant-Colonel Amyot and his staff. During the month of September, 1918, from nearly 42,000 Canadian troops in Great Britain there were admitted to hospital suffering from venereal diseases 960 cases, practically a battalion. During the month of September, 1918, from among 110,000 Canadians in Great Britain there were 750 similar admissions. In two years the venereal incidence had been reduced more than 66 per cent.; it stood now at less than a third of what it did two years ago. Had they continued at the same rate the admissions during the month of September, 1918, would have been, not 750, but over 2500—that is, two battalions and a half out of action.

The Dangers Ahead.

Throughout the war the soldier had been well cared for with regard to venereal disease, but it was the civil population that to-day constituted the grave danger, and nothing had been done to meet the emergency. When our soldiers returned and were feasted, made drunk, solicited, and fell, there would be no medical orderly-room to go to after demobilisation, no provision for early treatment, no N.C.O. to see that the elaborate toilet was duly performed. The soldier would receive and not give, and, admitting that the provision of prophylactic treatment to an uninstructed public might well result in the spread rather than in the production of the disease, he was strongly of opinion that the soldier before demobilisation should be provided with the means of prophylactic treatment, should be advised where and how to obtain "tubes" without difficulty, and, moreover, be given precise detailed instructions as to the method of employment. For the good of the country he saw no other possible course. To those who, in the supposed interests of morality, would still maintain the policy of silence he could only repeat what he had said in Westminster in July to the National Conference upon Maternal and Infant Welfare: "Which is the more immoral act, to advise a man how to prevent infection if he has transgressed the moral code, or calmly and coldly to look on without moving a finger while, through ignorance on his part, the innocent wife and children are diseased, and they and the community suffer through generations?" Unless something were done and that immediately the next few months would see a spread of venereal disease in this country that for generations would cause the Empire to suffer. Now, if ever, it was well to repeat His Majesty's famous exhortation, "Wake up, England."

Discussion.

In the discussion which followed Professor HUGH H. YOUNG, Colonel, U.S.M.C., strongly advocated the use of prophylactic treatment which had been enforced in the United States Army in 1912. In the following five years venereal disease was reduced nearly 50 per cent. During the war as far as possible large centres like Liverpool and London were avoided in sending troops through England, and in France brothels were placed out of bounds with very gratifying results. Some of the brothels in that country were terrible places, accommodating as many as 1000 or 1500 men in the course of an afternoon or evening. Even granting that the women there appeared to be healthy on medical examination, when men followed each other in such rapid succession the women became carriers of the disease. In one case a boy doorkeeper who had frequent connexion with these women was found to be actively syphilitic. The women acted as temporary hosts for the disease and sources of danger regardless of the most careful medical examination. This was a point which he thought was new. The situation in London and other big cities was a disgrace, and it was a crime that the police should not be able to arrest the women whom they knew to be prostitutes. The soldiers would come back to a civil population presenting far more dangers than the soldiers themselves. Prostitutes were greater criminals than thieves, for what was the loss of a little money compared with the health of the country's manhood? The calomel packet with a leaflet giving full instructions for use on one side and moral instruction on the other, if thought necessary, should be on sale in slot machines at 1d. throughout the country.

Professor WILLIAM F. SNOW, Lieutenant-Colonel, U.S.M.C., who is in charge of the Repression of Venereal Diseases Department of the Surgeon-General's Office, United States, said, starting on the basis that continence was the best remedy, the American Government had provided all kinds of entertainment as a counter-attraction for sexual excitement. The public were notified as to what was being done and told that the Army would be affected by the way the public authorities looked after its manhood. The public had never opposed any of the Army's proposals. There was no conflict between morals and public health. He did not fully agree with Colonel Young as to the use of slot machines, because the packet gave the man the opportunity of making his own diagnosis and treating himself, which might not be done properly. If all dispensaries opened their doors to the man who said "I have just exposed myself" he did not see any moral danger in it.

Major-General Sir FRANCIS LLOYD, who had commanded the London district for the past five years, said the question ought to be dealt with from every point of view.

Sir JAMES W. BARRETT, Lieutenant-Colonel, R.A.M.C., late Australian A.M.C., in giving his experiences with Australian troops, said that moral forces had been brought to bear, but it was only after the use of prophylactic methods that any general good had resulted. In regard to the general question, the root cause of the whole trouble was the marriage age. While that age remained on an average 30 for men and 27 for women, there was nothing that would prevent the sexual relationship of many people.

Surgeon Captain P. W. BASSETT-SMITH, R.N., detailed the voluntary prophylactic methods in use in the Navy.

Sir ARTHUR NEWSHOLME considered that the Canadian and American methods of meeting the venereal peril were the most complete that had yet been devised, but he was imbued with a sense of despondency at the relative ill-success of the results. If under military discipline the results were disappointing, what prospect of very rapid or immediate success was there under the free conditions of civilian life? When a public health measure came in conflict with morals the first would suffer, and if a public health measure were to be carried and applied with success moral sentiment must go with it.

Professor J. A. AMYOT, Lieutenant-Colonel, C.A.M.C., said that the men were given every possible means of treatment, and the results had been satisfactory.

Dr. HELEN CHAMBERS was of opinion that the reason for the ineffective way of dealing with the matter in the past was the fact that the woman's point of view had been ignored. The time had come when women should receive instruction from the medical women of the country. The scandalous state of the streets should be dealt with by women police. She pleaded for institutions where patients suffering from venereal disease could be sent as infectious patients and retained till cured, and where the nature of the disease would not be made public.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Exhibition of Cases and Specimens.—Abderhalden's Pregnancy Reaction.

A MEETING of this section was held on Nov. 22nd, 1918, Sir J. W. MOORE, the President of the Academy, being in the chair.

Dr. R. D. PUREFOY showed a specimen of Tubal Pregnancy, which was discussed by Sir WILLIAM SMYLY and Dr. BETHEL SOLOMONS.

Dr. SOLOMONS showed a specimen of Sarcoma of the Cervix which he had removed from a woman aged 50. She had been married 26 years and had 11 children, the youngest of whom was 11. She complained of a feeling of "womb falling" after the birth of her last child, but the symptoms vanished until 14 days before she consulted him. On examination it was found that a large mass, about the size of a large grape fruit, filled the vagina and was connected with the posterior lip of the cervix, with which it was incorporated. The tumour was removed, and as the cervix was hypertrophied it was amputated. A pathological examination by Dr. J. T. Wigham revealed the growth to be a spindle-celled sarcoma, with a large amount of hyaline degeneration of the capillaries, forming a kind of cylindroma. Following

this report, Dr. Solomons performed Wertheim's hysterectomy, and convalescence was without incident. The uterus on examination proved to be normal. He commented on the silent growth of the tumour, with absence of symptoms, which was typical of these rare cases of primary sarcoma. He thought that a radical hysterectomy should always be done in this class of case.

Dr. J. T. WIGHAM thought that the sarcoma, although malignant, was, if one might call it so, a benign form of sarcoma.

Dr. PUREFOY said that sarcoma limited to the cervix uteri was rare. In very young subjects myxosarcoma was sometimes seen springing from the cervix in the form of numerous small cysts, but its removal was generally followed by recurrence. Notwithstanding the pathologist's opinion, he was inclined to regard Dr. Solomons's case as one of uterine fibroid showing sarcomatous degeneration.

Sir WILLIAM SMYLY showed Two Tumours of the Mesentery removed from a patient in the Adelaide Hospital. The patient had a large cystocele which protruded through the vulva and caused much difficulty in emptying the bladder. On examination a tumour was discovered in Douglas's pouch which was supposed to be ovarian. After performing an anterior colporrhaphy the abdomen was opened and the tumour, which was exceedingly friable, was drawn out and found to be intimately connected with the intestine. A second tumour was discovered higher up in the mesentery. The tumours, which were thought to be malignant, were removed, together with about two feet of the ileum and a large piece of mesentery, and the severed gut restored by a side-to-side anastomosis. The patient made an uneventful recovery.

Captain J. SPEARES, who examined the specimen, said that the edges of the tumour were tubercular, but the central portion was so necrotic that it was impossible to diagnose the condition.

Dr. W. M. CHOFTON read a paper on Abderhalden's Pregnancy Reaction and Beard's Theory of the Alternation of Generations in Vertebrates. After describing the nature of tissue digestion of normal foodstuffs and abnormal substances given parenterally, he showed that the substrate—viz., the placenta—with the possible exception of the syncytial layer, could not possibly be considered foreign or disharmonious, and that, therefore, no specific ferment would be found for it in the maternal system. On the other hand, if Beard's theory was correct, the cells of the chorionic villi, &c., belonging to the phorozoon or asexual generation were foreign or disharmonious, and therefore a specific ferment would be formed to their protein which could be recognised by a complement fixation test. He criticised Abderhalden's method of detecting the presence of his protective ferments.

LECTURES ON INFANT CARE.—On Mondays, from Jan. 27th to April 14th, at 5.30 to 6.30 P.M., a course of 12 advanced lectures on infant care, for nurses, health visitors, teachers, infant-welfare workers, and others, will be held at 1, Wimpole-street, London, W., under the auspices of the National Association for the Prevention of Infant Mortality. The course is in preparation for the advanced certificate of the Association. The fee for the course is 5s. and for a single lecture 1s. On Thursdays, at 7 to 8 P.M., from Jan. 23rd to April 10th, a similar course of elementary lectures, in preparation for the creche nurses' certificate, arranged by the Association, together with the National Society of Day Nurseries, will be held at the Midwives' Institute, 12, Buckingham-street, Strand, London, W.C. To secure this certificate students must take 12 months' training and gain a certificate for proficiency at an approved day nursery, attending two courses of 12 lectures, of which this is the first. The fees are 10s. for the course or 1s. for a single lecture. Tickets from Miss Halford, secretary, National Association for the Prevention of Infant Mortality, 4, Tavistock-square, London, W.C.1, or from Miss Maddock, secretary of the National Society of Day Nurseries, 13, Victoria-street, London, S.W.1. A further special course of 12 lectures on infant care for health visitors, midwives, school teachers, voluntary health workers, and committees of nursing associations, will be held at the University Museum, Oxford. Some local authorities now have the power under the Maternity and Child Welfare Act of August, 1918, to defray the expenses of their workers in attending lectures such as these.

Reviews and Notices of Books.

War Story of the Canadian Army Medical Corps. Vol. I. By J. GEORGE ADAMI, M.D., F.R.S., Temporary Colonel, C.A.M.C. Published for the Canadian War Records Office by Colours, Ltd., and the Rolls House Publishing Co., Ltd. 1918. Pp. 286.

Sir Robert Borden, in opening an admirable collection of Canadian war pictures at the Royal Academy, London, on Jan. 4th, spoke of the inspiration he found in witnessing the triumph of spirit in Canadian hospitals over dull pain and monotony of long weary months, and that the inspiration was not lacking on the side of those who devoted their services to the care of sick and wounded is abundantly evident from the pictures themselves as well as in the story of the work of the Canadian Army Medical Corps told by Colonel Adami in a book to which Sir Robert Borden contributes an introduction. The record is intended, first of all, for the actual men of the corps, to whom, and to whose children's children, the wealth of personal detail will be of surpassing interest. But to the non-Canadian reader the story has the freshness of an adventure. The first volume, which is in our hands, deals with the medical service of the first contingent of Canadian troops up to the autumn of the year 1915. Canada being in the happy position of having seen little active warfare since 1812, the C.A.M.C. had to work out its arrangements largely as it went along. The Riel rebellion in 1885 necessitated the appointment of medical officers to the field force, and it was in this little campaign that a surgeon-general was first appointed at Ottawa. The wounded were few and sickness was slight in a campaign on conspicuously healthy terrain. It was as recently as 1896 that a definite medical subdepartment was created to the militia, when the late Sir Frederick Borden, himself a medical man, became Minister of Militia.

The story of the organisation of the corps during the following 20 years is of more than ephemeral interest. Appreciation of the value placed upon research is one of the strong traditions of the corps, with the result that research was carried on in the field, and No. 5 Canadian Mobile Laboratory has formed the background of a number of articles of permanent value which we have published in our own columns dealing with such practical matters as chlorination of water, mosquito prevention, and sundry aspects of trench fever. The use of poison gas as a weapon of offence was a terrible experience in which the C.A.M.C. was the first to participate. The diary of Thursday, April 22nd, 1915, cannot now be read without breathless interest, and the enterprise of Lieutenant-Colonel Nasmith in reporting almost at once on the nature of the attack and the means desirable for facing it may count as one of the achievements of the corps. Alongside the Turcos staggering back through the lines, dazed and weaponless, ran numbers of Belgian hares escaping from the gas and already so affected by it as to be knocked over without effort by the canteen cooks. Incidentally, poison gas had one thing to recommend it: Colonel Adami records that it materially reduced the live stock in the dug-outs and had an excellent potency in destroying the parasites of "that most irritating and most humiliating skin disease"—namely, scabies.

The C.A.M.C. is happy in its biographer, and the concluding volume or volumes will be awaited with keen anticipation.

The Organs of Internal Secretion, their Diseases and Therapeutic Application: A Book for General Practitioners. By IVO GEIKIE COBB, M.D., M.R.C.S. Second edition. London: Baillière, Tindall, and Cox. 1918. Pp. 274. 7s. 6d.

WHEN the physiology of the internal secretory organs has been so far elucidated, and the effect upon them of disease and their therapeutic application have been so fully studied of late years, some such work as this was needed in order to give the busy practitioner a simple lucid account of the rôle of the ductless glands, together with a practical guide to their means of treatment. The first edition was published in 1916. The second edition has been revised and brought up to date, and a chapter dealing with the relation of the internal secretions to functional nervous disease has been added, and will be found a useful addition at the present time.

Clinical Case-taking. By ROBERT D. KEITH, M.A., M.D. Aberd. London: H. K. Lewis and Co., Ltd. 1918. Pp. 104. 3s. 6d. net.

THIS is an excellent little book for the junior hospital student, being simple, clear, and concise. It was originally written for the students of the King Edward VII. Medical School, Singapore, so that the question of common tropical diseases is more than usually prominent. The introductory chapter gives a useful résumé of the scheme of case-taking, which is described and expanded in the following chapters, and the student cannot do better than have it at hand when examining a patient, and follow it out in every detail. Perhaps here at home, where, generally speaking, there is no language difficulty and time is available in which to deal fully with each case, we should be inclined to bestow more care and trouble in investigating the previous and family history than is here suggested, but that is a minor defect in an otherwise valuable little manual.

Differential Diagnosis. Vol. II. Presented Through an Analysis of 317 Cases. By RICHARD C. CABOT, M.D. Second edition, revised and illustrated. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 709. 25s.

THE essence of the manner in which the subject of differential diagnosis is treated in these volumes is contained in the subsidiary title. The method is new and very instructive. This volume treats of the differential diagnosis of 19 prominent symptoms, and includes chapters on abdominal and other tumours, vertigo, diarrhoea, dyspepsia, hæmoptysis, hoarseness, pallor, &c. The cause of each symptom is first given and the relative frequency of its occurrence in various diseases is shown in tabular form, after which the cases are described and discussed and the outcome recorded, whether recovery or otherwise, or the findings either at operation or post mortem. The reading of such a book as this is the next best thing to a course of post-graduate clinical study.

Materia Medica and Therapeutics: An Introduction to the Rational Treatment of Disease. By J. MITCHELL BRUCE, M.A., LL.D. (Hon.) Aberd., F.R.C.P.; and WALTER J. DILLING, M.B., Ch.B. Aberd. Eleventh edition, revised to correspond with the War Amendments of July, 1917, and March, 1918. London: Cassell and Co., Ltd. 1918. Pp. 675. 9s.

THIS edition was being prepared when the changes were being made in the British Pharmacopœia consequent on the scarcity and increasing cost of many of the drugs in general use. The original formulæ appear as before, but the reader is referred in each case to a War Emergency Formulary at the end of the book, where the temporary substitutes are described. Many new remedies are noted, and such measures as electrical treatment, massage, and exercises are described more fully than before.

Aids to Medical Diagnosis. By ARTHUR WHITING, M.D. Second edition. London: Baillière, Tindall, and Cox. 1918. Pp. 167. 3s.

"AIDS" of any kind are to be deprecated unless used in the manner for which they were intended. Students of the less ambitious sort are tempted to rely on manuals of this size in the wrong way, and to regard them as "cram" books instead of setting themselves to the study of medicine in its fuller and larger aspects. Nevertheless, such a book is useful, provided it be looked at from the proper standpoint. These little "Aids" are of such a size that they can be carried about in the pocket, and are valuable for reference during, for instance, the examination of a patient. There are a few slips which should be corrected in a subsequent edition. On p. 45 it is stated that the characteristic feature of diseases of the blood is pallor; this is, of course, not so in all blood diseases. With regard to "scurvy-rickets," it was shown by Cheadle in 1878 that this name was a misnomer. The disease is usually known either as "Barlow's disease" or "infantile scurvy," the rachitic features being by no means always present and being entirely distinct, etiologically, from scurvy. Sporadic cretinism would benefit by a fuller description than that given. Perhaps the meagreness of the description is due to

the fact that infantilism is not dealt with in any form, and this, we think, is a disappointing omission, as many forms of infantilism are by no means uncommon, and the main diagnostic features would take up little space. Dry pleurisy should surely not be included under "Diseases with Dullness on Percussion," a dull percussion note being said to be one of the diagnostic signs. Books of this kind have their uses, but students should be warned against placing too much dependence on them to the neglect of fuller reading.

JOURNALS.

Reconstruction. A Monthly Bulletin published by the Department of Soldiers Civil Re-establishment, Canada. October, 1918.—An Order in Council has been passed to protect discharged soldiers with amputations from the competitive attention of representatives of private manufacturers of artificial limbs. Sir James Lougheed, the Minister responsible, points out that no man with an amputation can ever feel he is bodily complete, however long he has been wearing the most perfect artificial limb possible. Although no trouble or expense has been spared by the Government to provide the best limb available, a number of manufacturers and vendors of artificial limbs have endeavoured to convince returned soldiers that the Government issues are clumsy and of little value. All artificial limbs and appliances manufactured by the Government are stamped; the Order in Council enacts that no person to whom an artificial limb or appliance is issued shall transfer, exchange, or otherwise relinquish such limb except with the written consent of the Minister, nor must such limbs or appliances be altered without similar consent. Any person disparaging goods manufactured or issued by the Department is liable to a fine. A blinded officer who after training at St. Dunstan's has been carrying on his former profession, that of electrical engineer, has been appointed to the vocational staff to represent the Government in dealing with blinded soldiers. These men will be persuaded, if possible, to accept the Government offer of training at St. Dunstan's before leaving England. 1347 men have already graduated from industrial re-education courses; 1877 are at present under instruction. Since the work began only 339 men have refused to take up a course; 558 have discontinued for various reasons. This number, however, includes 111 men whose course has been suspended for a short time to enable them to take part in agricultural production.

The Military Surgeon.—In the issue of this journal for October, 1918, Colonel Victor C. Vaughan and Captain G. Palmer complete their account of the infectious respiratory diseases in the U.S. Army last winter. These diseases were specially frequent among men from country districts and particularly from the Southern States. This is in great measure due to want of acquired immunity, but even more to want of education in sanitation, and the correlated personal carelessness. In the camps most attacked were men who had grown up in bad sanitary surroundings and who did not know how to look after themselves. Consequently they had, many of them, before entry, become infected with hookworm and malaria and venereal disease, and classes had to be held to teach them the use of water-closets and toilet paper. They were unaccustomed to the better food of the Army; they did not wash their hands before meals; they expectorated everywhere and could not see any harm in that; they required more bedding and clothing than others and they were easily fatigued. As very few were immune they rapidly developed these infections. The better the hospital accommodation in the camps, the more quickly cases "going sick" were sent there, the fewer the deaths from pneumonia. Overcrowding is considered a cause of infectious disease prevalence, but little weight is given to that, and ventilation is hardly mentioned. Still, it is noted that officers, who are less crowded, more often escape these diseases. It is observed that officers, too, are generally less fatigued. In one camp the men who did guards suffered most; the quartermaster's staff, the cooks, and the officers escaped. Faulty quarantine also did great harm. It is hoped that in future recruits will be sent to observation camps to begin with, there to be quarantined, vaccinated, and taught hygiene and a little physical drill before they are transferred to the large camps to undergo military training.

A TRIBUTE TO SIR LEONARD ROGERS, L.M.S.—The Calcutta School of Tropical Medicine, which already possesses a portrait of Sir Charles Farley Lukis, has now memorial to the work of Sir Leonard Rogers, the professor of pathological medicine in Calcutta Medical College. bust of Sir Leonard Rogers has been unveiled by Lord Ronaldshay.

THE LANCET.

LONDON: SATURDAY, JANUARY 18, 1919.

Industrial Efficiency and Preventive Medicine.

THE physical inefficiency of our industrial classes is one of the spots in our social organisation which, hitherto dark, the searchlight of war has all too brilliantly illuminated. Our national unreadiness for war was most marked not in the fighting forces but in the industrial organisation behind these forces. Our Army may, as regards size, have been "contemptible," but it was constructed on a model which withstood the test of tenfold multiplication. The call of the Army for men, on the other hand, laid bare an appallingly low standard of physique among men of fighting age; and when this call had, so far as was possible, been met, our industries, particularly the munitions industry which supplied the fighting forces with their life-blood, had to rely mainly upon the fit in our population, who were over military age, and much admirable female labour. Then the discovery was made that owing to the conditions of industrial life during the past half-century there were but few skilled craftsmen over the age of 50 who had not already "gone West." Now the war is over, and attention is being given to reconstruction and reorganisation; and nowhere is fresh effort and new work more called for than in trying to ensure for the future generation a higher standard of health among the industrially employed. Two questions call for prompt reply: Who is to be entrusted with the effort which is needed? and How is the effort to be carried out?

The questions are really one, for the methods adopted will to great extent depend upon the agency selected. In the past what has been done to improve the lot of the worker has been carried out by the Home Office administration of the Factory Acts, Shops Hours and Mines Regulations Acts, and the Coal Mines (Minimum Wage) Act, and a decision must now be arrived at as to whether action concerning health and industry in relation to labour is in the future to be administered by an office destined, according to the Haldane Committee¹ to become a Ministry of Justice. If the decision is against the Home Office continuing in charge of the work, should the administration be entrusted as a health question to a new Health Ministry, or as an employment matter to the Ministry of Labour? There is much counsel, and as usual the old adage "In the multitude of counsellors there is wisdom" falsifies itself, because each counsellor counsels differently, and the adage does not indicate how the

wisdom is to be sifted out from the multitude. For once, however, on an admittedly difficult question, we have before us advice flowing from two separate sources which is in close agreement. First, the Haldane Committee are definite and explicit:

"We are satisfied that the inspection and regulation of conditions affecting the health and safety of industrial workers are matters for which the Minister of Employment, and not the Minister of Health, must be responsible to Parliament. . . . The ordinary methods of consultation (between two departments) will probably require to be supplemented from time to time by the appointment of special committees, on the principles which have proved conspicuously successful in the case of the Health of Munition Workers Committee, to advise the Minister of Employment upon problems of industrial health which are new in kind or have assumed a peculiar importance or urgency."

Secondly, the Association of Certifying Factory Surgeons² has recently prepared a report upon this subject and state:

"We think, however, that early arrangements should be made for transferring the whole of the Factory Department from the Home Office to the Ministry of Labour. It appears to us that the Ministry which has the economic problems of labour under its care and direction is the proper body to take charge of occupational health and safety problems, but we are particularly influenced in our view by the conviction that Labour Exchanges could be made into such useful adjuncts to medical examination by securing for young people employment suited to their physical condition. We are also of opinion that the health and welfare measures established by the Ministry of Munitions could be more suitably carried on by the Ministry of Labour than by the Home Office."

Clearly, then, the balance of opinion would favour that the Ministry of Labour (or, as the Haldane Committee prefer it to be called, the Ministry of Employment) should be entrusted with the duty of organising industrial health supervision. There remains for consideration—How is the end in view to be attained? An answer to this question is hardly to be sought from the Haldane Committee, for it was not within their terms of reference, but the report of the certifying factory surgeons contains many valuable suggestions as to the way in which the work could be done by linking up the Employment Exchanges with the Medical Factory Service, especially in relation to juvenile employment. We would here express a word of regret that adults are not more fully considered by the Association of Certifying Factory Surgeons, feeling, as we do, that only by close and intimate association between the Employment Exchanges and the places of employment can any coördinated attack be made upon what is to-day the most serious economic loss in industry—that due to the turnover of labour, and the resulting wastage of workers. Our readers should in this connexion be familiar with the admirable report issued from the Medical Research Committee on the wastage of female labour in munitions factories.³ Apart, indeed, from the serious loss thus indicated, social economy is not served by sending A 1 men to work which could be carried out by C 3 men, while to send C 3 men to attempt A 1 work is homicidal.

We desire to see every employer of labour with the whole- or part-time services of a doctor at his disposal to advise him on welfare and health

¹ Report on Reconstruction of Factory Medical Service. Manchester Co-operative Printing Society, Ltd., 118, Corporation-street, 1918.

² Medical Research Committee: A Report on the Causes of Wastage of Labour in Munitions Factories Employing Women. H.M. Stationery Office, 1918. Price 1s. 6d. net.

³ Report of the Machinery of Government Committee (Cd. 9230). H.M. Stationery Office, 1918. Price 6d. net.

matters; to examine new workers; to watch over the health of his whole staff; to supervise the hygiene of his establishment as regards ventilation, light, temperature, cleanliness, and first-aid appliances; to advise and help the Welfare Department; to be, in fact, an industrial medical officer of health. Such officers should also be retained to advise the local employment exchanges as to the type of worker to be drafted to this or that trade or process. They should also be employed to conduct the periodical examinations of juveniles industrially employed as will be required under the provisions of the Education Act, 1918, and so to coördinate the school and factory medical supervision. Such local officers would require to be directed and assisted by a medical organisation controlled from headquarters—a nervous system of which the local service would be the peripheral end-organs. The value of such a medical organisation, associated with the Government Department concerned with employment, would be incalculable not only to carry out investigations and assist research into the effect of industrial conditions and hours of labour, but also to influence the adoption of health reform based on sure knowledge so obtained. Probably in the whole field of preventive medicine nothing more urgently calls for action than the establishment of organised medical supervision of employment on sound lines; probably no field promises in return for cultivation a finer harvest of results. In the past unfavourable conditions of employment, overwork and fatigue have caused irritability and labour unrest, impaired physique and disease.

"The subject of industrial efficiency in relation to health and fatigue is in a large degree one of preventive medicine, a question of physiology and psychology, of sociology and industrial hygiene. Without health there is no energy, without energy there is no output. More important than output is the vigour, strength, and vitality of the nation."

Thus the final report of the Health of Munition Workers Committee in the sentences we quote summarises the whole great truth. In the immediate future the nation, as never before, must obtain industrial efficiency through preventive medicine.

Accurate Diagnosis in Appendicitis.

DURING the last 30 years the rôle of the appendix vermiformis in health and disease has been a frequent topic both in medical and lay circles. Before that time little of ill had been laid to its charge; if a criminal, its crimes remained undetected. But at the present time it has become the pathological scapegoat, every pain and ache below the diaphragm casting suspicion upon the appendix; so that the hand of every surgeon is against it. In spite of the attention that it has received the fact remains that the normal appendix has not been sufficiently studied, not only in its anatomy but also and especially in its physiology, and there are questions as to the activities of the appendix which have not, hitherto,

received any very definite answers. The means to accurate diagnosis are not yet at our disposal. In the present issue of THE LANCET is an important paper by Dr. E. I. SPRIGGS on the normal anatomy and physiology of the appendix as revealed by the aid of X rays, and the paper is illustrated by accurate coloured drawings and a large number of admirable skiagrams taken by Mr. O. A. MARXER. The X rays have already been employed to a certain extent in the investigation of the appendix but the observations in this paper are more complete and more thorough than anything that has preceded them.

The first thing to be settled by Dr. SPRIGGS and his collaborator was the best material for the opaque meal when it is required to demonstrate the appendix, and it was found that buttermilk and barium sulphate formed the most suitable opaque meal. Moreover, the best results were obtained when the bowel had been previously thoroughly emptied by castor oil. With these preliminaries adjusted, much physiology was made clear by the ensuing observations. In the first place, it became certain that even in health some of the contents of the cæcum enter and leave the appendix, that it fills when the cæcum fills, and that when the contents of the cæcum pass on their way the appendix discharges what it has contained, though sometimes the emptying of the appendix may be a little delayed. In the young, indeed, the appendix may fill and empty several times while the cæcum is still full. It is also certain that in the young the appendix is much more lively than in those who are old. The appendix was seen by Dr. SPRIGGS to move actively; some times the movement occurs as the organ fills, and sometimes without any reference to the passage of material into or out of it. So that we have learned much from these researches as to the conditions of the appendix when it is normal, something of its physiological movements, but, alas! we have learned nothing to enable us to answer the important question whether the appendix has a function or not. That it may be removed without any obvious impairment of health is no proof that it is valueless, for the spleen can be, and has many times been, removed without the least harm resulting, and yet no one would deny that the spleen is of functional importance. The persistence of the appendix, and its active movements, certainly do suggest that it may have some function in the economy of the human body, small though that function may be.

These investigations further afford us much insight into the pathology of the appendix, although such technique can be employed only in cases of chronic appendicitis, for in the acute form the time needed to prepare for and to take the skiagrams must not be spared. But in cases where the diagnosis of chronic appendicitis has not been definitely made, and when there are obscure pains in the abdomen of long duration and uncertain cause, it is all to the good if a diagnosis can be made whether there is or is not definite disease of the vermiform appendix. When sufficient skill

* Health of Munition Workers Committee, Final Report, Industrial Health and Efficiency. H.M. Stationery Office (Cd. 9065), 1918. Price 2s. net.

has been acquired and when adequate care is taken it is found that very great reliance can be placed on the appearances presented by the skiagrams, and Dr. SPRIGGS and Mr. MARXER are to be heartily congratulated on their work. They found that it is often necessary, as in the case of the X ray diagnosis of disease in other parts of the alimentary canal, that repeated observations should be made to determine whether the conditions indicated are temporary or permanent. By these means they have found it possible to say whether there are constrictions or kinks in the appendix, whether concretions are present or not, whether the appendix is dilated, and whether adhesions exist. If the appendix always occupies the same position, if manipulation with the hand cannot induce it to move, then we may be sure that adhesions exist which chain it down to one place. In one case brought forward by the authors the appendix gave all the indications of being healthy and empty, yet at a subsequent examination two small shot were seen in it; but they gave rise to no symptoms, though the appendix emptied itself more slowly than before, for it was found to contain some barium sulphate 24 hours after the cæcum had discharged its contents. The appendix was examined every week, and three weeks later the shot had gone. This interesting observation shows us that foreign bodies may not only enter but may also leave the appendix. That the diagnosis made by the X rays may be considered trustworthy we learn from Dr. SPRIGGS, for in all the cases in which a subsequent operation was performed the condition found was that which had been recognised on the skiagram. Thus there can be no doubt that we have in the use of the X rays a valuable aid in the diagnosis of chronic appendicitis, just as there can be no doubt that the information needs highly skilful record. The work of Dr. SPRIGGS and Mr. MARXER has been very thorough, and must have entailed great expenditure of time and pains well directed. The illustrations showing the actual skiagraphic appearances are sufficient guarantees of the practical worth of the research, for by the methods adopted information can be obtained that is otherwise unavailable—information which may either render operative measures unnecessary or much reduce their duration.

In this issue of THE LANCET, also, Mr. S. T. IRWIN, of Belfast, gives a careful classification of the forms of acute appendicitis, supported by some effective coloured drawings, and he claims that it is possible to discriminate definitely between the several varieties before the abdomen is opened, though many surgeons will hesitate to concur. He points out that in the obstructive form the attack always begins with the sudden onset of pain, and he believes that this suddenness is characteristic of the obstructive form, certainly the most dangerous of all the varieties. He shows that it is the obstructive form which on rupture gives rise to widespread peritonitis, for the pus which the appendix contains is at high tension, and only rarely is it that adhesions exist to confine the infection. In these obstructive cases the essential

in the treatment is early operation, for the rate of mortality rapidly increases with delay, and few of the cases in which the appendix has given way end in recovery. Mr. IRWIN rightly insists that the remedy for the high mortality in cases belonging to this category lies in the earlier operation, and the possibility of this depends mainly on the doctor who is first called to see the patient. In only too many cases is the surgeon told that the doctor has not urged the need for an operation, that he has tried soothing remedies which sometimes succeed in masking the serious nature of the attack—even the cessation of pain, which not rarely occurs on the onset of gangrene, has been mistaken for real amelioration. With the medical profession lies the onus of impressing on the patient and his friends the necessity for an early operation if the patient's life is to be saved in these cases. Correct diagnoses should be made in cases where the symptoms are well marked and the history is clear. The illustrations accompanying Mr. IRWIN'S paper show appendices in varying conditions immediately after removal, and illustrate appearances which are, of course, completely lost in preserved specimens.

The Harvard Medical Unit.

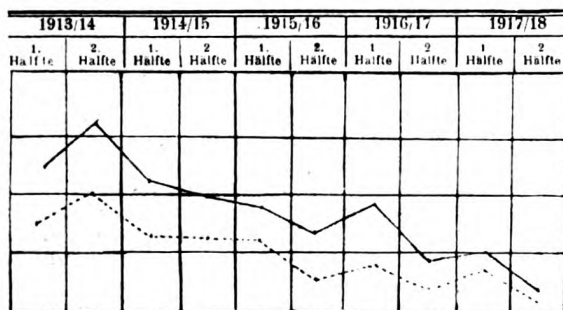
AFTER three years of friendly coöperation with the British Army Medical Corps in France, the Harvard Medical Unit is passing through London on its way back to the United States. In 1915 Colonel HUGH CABOT gave up his assistant professorship of genito-urinary surgery at Boston, with Dr. G. C. SHATTUCK and a group of colleagues, determined to offer us any help they could during the war and to see the business through to the bitter end. The Harvard Unit consisted of American medical officers and nurses with English personnel, at first under the command of Sir ALLAN PERRY, and from October, 1915, on with Colonel CABOT as chief. A most excellent friendly feeling has prevailed throughout amongst the members of the unit and between them and their British helpers, and has been no mean factor in that close professional relationship which has been springing up between American and British officers. The position of the unit has enabled it to form independent views on the important topics of war-time surgery. Their experience, Colonel CABOT tells us, gives no support to the belief that any of the new antiseptics and ingenious methods of applying antiseptics will have any permanent place in surgery. No antiseptic has yet been produced which may not do as much damage to the human tissues as it does to the micro-organisms. Antiseptic, in distinction to aseptic, surgery has not, in the opinion of the unit, gained strength by the experiences of the war. Direct blood transfusion, on the other hand, Colonel CABOT thinks, would gain by more frequent use, the simple method practised in America being preferred. The permanent record of the Harvard Medical Unit is still to come, but whatever the value of the scientific work it contains, the contribution made by the unit to a friendly feeling and a sympathetic understanding between the two Armies will be no less permanent. The war has done much to draw the two English-speaking peoples together, and we warmly endorse Colonel CABOT'S expressed desire to make this *rapprochement* more intimate by the interchange of students, both before and after graduation, providing for the purpose a large scholarship fund available for promising students on either side of the water.

Annotations.

"Ne quid nimis."

WAR CURES.

MUCH stress has been put, and rightly, on war diseases. That way progress has lain. But there have also been war cures, and of these we have heard less. The disappearance of functional nervous disease among the civil population during the last four years is, however, a matter of general comment. In Berlin we understand that migraine disappeared completely from the month of August, 1914, and, without doubt, the work of general practitioners in this country has been mitigated by the fact that they have seen fewer minor ailments. Many of these, while real enough, are such as the patient communicates only to his or her (generally her) family doctor, and the particular family doctor has generally been away. Minor ailments cannot be assessed in actual figures, but there is a certain amount of evidence accumulating in regard to definite morbid conditions which have become numerically less frequent during the war. Dr. Herbert Elias and Dr. Richard Singer laid before the Vienna Medical Society on Oct. 18th last a therapeutic study¹ of the influence of war diet upon diabetes. Their conclusion is based upon figures, and it is a remarkable one. All degrees of diabetes as it occurred in Vienna were favourably influenced by the altered circumstances of war, in males almost without exception, in females frequently but by no means universally. The chart which we



reproduce here shows the decreasing number of diabetics dying in the Vienna General Hospital during the last five years, the thick line indicating total deaths, the interrupted line the deaths occurring in coma. The authors express regret that they cannot give the result in percentages, inasmuch as the total diabetic admissions to hospital could not be ascertained, but of the general lesson to be drawn from the chart there appears to be no doubt. The better war prognosis in males as distinguished from that in females is a fact claimed by these observers as a new observation, coinciding with their pre-war experience, for which they venture to advance no explanation. In the case of patients with slight glycosuria the difference between war and pre-war experience was very striking. Whereas not one of 29 slight diabetics before the war could be regarded as cured, 33 out of 39 became sugar-free under war conditions. The experience of Bouchardat during the siege of Paris in 1870-71 is quoted as having been similar. G. Klemperer, P. F. Richter, and others have noted the increased carbohydrate

tolerance, and have made similar observations in enemy countries during the present war. The cure of diabetes is perhaps of greater interest than the disappearance of obesity, of gout, and of chronic constipation noted during the same period and the increasing rarity of eclampsia in pregnant women. The balance is not equalised by the alleged increase in the frequency of peptic ulcer. Any observations of a similar character made in this country would be of interest and might throw useful light on the relation between habit and metabolic disorder.

BRONCHO-SPIROCHÆTOSIS.

THANKS to the work of G. A. Lurie,¹ Galli-Valerio,² and H. Violle,³ the subject of broncho-spirochætosis has received considerable light. The condition until recently was only of interest to the tropical practitioner, but lately it has become a serious matter to medical men in Europe, cases of the malady having been reported from Serbia and the Balkanic zone, Switzerland, and France. The condition and its etiological agent were first described in Ceylon in 1905 by Castellani, who later named the causal agent *Spirochæta bronchialis*. His researches were confirmed by S. Branch in 1907 in the West Indies, by Jackson in the same year in the Philippine Islands, and by several other observers, whilst H. G. Waters in 1909 recorded numerous cases from India. The condition was later found in practically every part of the tropics, of special importance being the work of Chalmers and O'Farrell, who succeeded in reproducing the disease in monkeys, and the thorough investigation of Fantham on the morphology of the organism. *Spirochæta bronchialis*, according to the description given by all these authors, is so markedly polymorphic that the suggestion arises whether the term does not cover more than one species or variety of spirochæte. The classical investigation of Fantham⁴ seems to prove, however, that the various forms found belong, in reality, to only one species, differing from the spirochætes occurring commonly in the mouth. Fantham discovered the coccoid stage of the parasite, which he believes to be of fundamental significance in the dissemination of the malady. Clinically, three types of the condition are to be distinguished—the acute, the subacute, and the chronic. The *acute type* develops abruptly; the patient complains of headache and rheumatoid pains all over the body; he feels chilly and coughs much, though there is but very scanty mucoid or muco-purulent expectoration. The fever generally lasts from 3-6 days. This influenza-like type of broncho-spirochætosis has given rise to a suggestion⁵ that true influenza may be a form of spirochætosis. The *subacute* and *chronic types* of broncho-spirochætosis are of practical relevance, as they may closely simulate pulmonary tuberculosis. In these types the patient often spits up blood, and this, together with wasting, an evening rise of temperature, and, on examination, the presence of patches of dullness and crepitations, may suggest a diagnosis of phthisis. In a certain number of cases, however, the general condition remains good. The first patient seen by Castellani in Ceylon in 1905 was still alive in 1915, and Violle quotes a number of cases in which the general

¹ Journal of Tropical Medicine, Dec. 1st, 1915.

² Correspondenzblatt für Schweizer-Aerzte, February, 1917.

³ Presse Médicale, July 11th, 1918; THE LANCET, 1918, II., 775.

⁴ Annals of Parasitology, July, 1915.

⁵ De Verbizier: Bull. Académie de Médecine, Séance 8 Octobre, 1918.

¹ Wiener klin. Wochenschr., Nov. 21st, 1918.

condition remained good throughout the course of the malady. The prognosis of broncho-spirochaetosis is, therefore, in most cases, good as far as life is concerned, but relapses seem to be extremely common, and cases of a malignant type, terminating fatally, have been placed on record.

As regards treatment most authors rely on arsenic, whilst others employ change of air, rest, and plenty of nourishing food. Galli-Valerio has used salvarsan with apparently good results. The whole subject deserves further investigation, especially in regard to the geographical distribution of the condition in the temperate zone, and the mode of infection. The practitioner should also be on his guard, as it is quite possible that a certain number of cases which, in the past, have been regarded as pulmonary tuberculosis, even though tubercle bacilli were constantly absent in the sputum, may have been cases of broncho-spirochaetosis.

LUNACY IN EGYPT.

We learn from the Report on Lunacy in Egypt for the year 1917 that the total number of admissions to asylums in that year was 1062, the largest on record. There are still only the two asylums in Egypt, one at Cairo, chiefly for the city dwellers, male and female, and the other at Khanka, where patients from the scattered districts are chiefly sent. The two groups of cases differ materially, general paralysis being common at Cairo but very rare at Khanka. Three different social classes are treated in the asylums, the paupers, those who contribute something towards their support, and the private paying patients. Voluntary boarders are still received. The patients we regret still to find in the parent institution are the criminal lunatics. The increase in the number of admissions is due chiefly to the fact that more patients are sent direct to the asylums and not detained in the local general hospitals; among them are a very large number of pellagrous insane. At both the asylums accommodation is inadequate, with the result that many partially cured patients are prematurely discharged to make room for the more acute cases, and frequently these patients break down again or add to the sum of criminal lunatics. The death-rate is very high in the two asylums, the total number of deaths during the year being 369, or 17.4 per cent. of the number resident. It should be noted, however, that many deaths occurred in patients who had only recently been admitted, due to the fact that they had been kept too long at home. A special hospital for military patients has been constructed out of the former assistant medical officer's house, to which during the year 126 cases were admitted, nearly every form of mental disorder being represented. The residence of these soldiers in the hospital was very short, and no accidents or deaths occurred. The admissions included a large number of adolescent cases, four general paralytics, and only two alcoholics; delusional cases were common, and melancholia occurred more frequently than mania. As to the apparent (or rather attributed) causes of insanity, congenital mental defect and general physical strain due to shell shock or to dysentery, or other debilitating causes, were recorded as common, and there were many relapses, but in the greater number the cause was mixed or doubtful. Turning to the medical superintendence of the asylums we call attention again to the work of Dr. John Warnock, C.M.G., and during his absence on active service of Dr. H. W. Dudgeon. Their

administration has been of the highest order, and praiseworthy effort is continually made to carry on scientific investigation; the State laboratory has assisted in the examination of the blood of 100 consecutive admissions, a positive Wassermann reaction being found in many other forms of mental disease than general paralysis of the insane. Blood and faeces were also examined in cases of bilharzia. In each report a table is given showing the number of criminal lunatics admitted, the nature of their crimes, and the form of their insanity. Eighty persons were thus received, namely 72 men and 8 women, and of these pellagrous insanity provided 12, hashish only 1, and G.P.I. 2. Next to pellagra, dementia is given as the most common form of insanity met with. In all there were 400 male criminal lunatics and 37 females. Attempts at murder were common, but theft was the most usual offence, the same applying to the pellagrous insane, while every form of antisocial crime was represented.

TETANUS WITHOUT TRISMUS.

THE enormous medical experience of the war has modified our knowledge of many diseases. Perhaps the most striking example is tetanus. It used to be taught that trismus was a characteristic early sign on which the diagnosis turned in cases of doubt. But the extensive prophylactic use of antitoxin in the wounds of war has produced new types of the disease in which old and well-established rules fail. We now know that the disease may be so mitigated that the spasms may be confined to the neighbourhood of the wound (local tetanus) and trismus or other spasm be completely absent. This form was known previously in experimental tetanus in animals. But the view of the pathology of tetanus brought forward by Professor H. H. Meyer and Dr. Fred Ransom (*THE LANCET*, Dec. 22nd, 1917, p. 929) that the increased irritability of the nerve centres is due to the passage of toxin up the motor nerves to the spinal cord, in which process the nerves of the infected area are at an advantage, would suggest that tetanus should always be local in onset, and, indeed it has been asserted that if cases are carefully watched from the beginning spasms of the muscles in the neighbourhood of the wound will always be observed. Not only is trismus absent in local tetanus, but, more remarkable, French observers have shown that it may be absent in general tetanus when modified by the prophylactic use of antitoxin. In the December number of the *Medical Review* is given the following case, recorded in the *Lyon Médical* by M. Roubier.

An Arab soldier was wounded in the left hand by a grenade on April 22nd, 1917. On the following day 20 c.cm. of tetanus antitoxin were injected, and eight days later 10 c.cm. On May 8th, when the wounds were healed and he was considered cured, the temperature rose to 102.6° F., and next morning to 105°. He sweated profusely and complained of pain in the neck and a little difficulty in swallowing. There was no trismus, and Kernig's sign was absent. Though the spleen was not enlarged malaria was suggested and quinine given. The temperature fell but rose again, and there were intense headache, slight dysphagia, and some stiffness of the neck. Kernig's sign and slight hyperaesthesia of the lower limbs were found. Blood examination was negative. On May 14th these symptoms persisted, and in certain regions a prick or even grazing of the skin produced local muscular contractions which were not painful. Lumbar puncture yielded normal fluid not under increased pressure. The contractions, which consisted of rapid twitches, not durable contractures, became more intense. On the 23rd the contractions were for the first time painful and there was contracture of the anterior muscles of the right thigh. It was increased on the slightest touch and paroxysms occurred spontaneously which were grafted on to the permanent hypertonia. Spontaneous twitches of the

sub-umbilical region occurred at variable intervals. Improvement began on June 7th and recovery followed. The treatment consisted in the administration of antitoxin and Baccelli's fluid. The absence of trismus rendered the diagnosis difficult. Malaria, septicæmia, and, on the appearance of the cervical rigidity, meningitis were in turn suggested.

Several French papers on tetanus without trismus have recently been published. Montais has shown that the classical form of tetanus which occurred at the beginning of the war became rarer as preventive serotherapy was more methodically applied. Lumière among 54 cases of tetanus after preventive injection found trismus absent in 15 and attenuated or late in appearing in 13. The explanation of the absence of trismus is not clear. A considerable immunity conferred by antitoxin would explain very well local tetanus or the late appearance of trismus as an initial symptom. But why should what are normally the most sensitive centres to the toxin become insensitive while other centres retain their sensitiveness?

HYSTERICAL VOMITING IN SOLDIERS.

THE war has given a great impetus to the study of functional nerve disease, and the literature of this subject promises to become a large and important one. The emotional stress and physical strain produced by the conditions of warfare are such as to provoke various neuroses, particularly in those predisposed to them. When these functional derangements are referred to the viscera their nature is likely to be overlooked. We published in THE LANCET of Jan. 4th an interesting paper on hysterical vomiting in soldiers by Captain W. R. Reynell. He points out that the hysterical nature of vomiting occurring in soldiers is liable to be overlooked and the condition thus often recorded and treated as if it resulted from some organic disturbance, such as gastritis. Captain Reynell gives a valuable definition of hysterical vomiting as "the perpetuation by suggestion of a symptom, due in the first place to a pathological condition such as that caused by gassing, dysentery, phthisis, or appendicitis." He states that gassing is the most frequent exciting cause of hysterical vomiting in soldiers, but he has observed that in a number of cases the vomiting is referred to an attack of dysentery, trench fever, or other infection. In either case the vomiting persists as an hysterical symptom long after the original exciting causes have ceased to be operative. In some cases the origin appears to be purely emotional. The vomiting may occur after every meal or only once or twice a day, while in mild cases there may be intervals of several days and the attacks of vomiting may be traced to emotional upset or to sudden excitement. The vomiting may be preceded by epigastric pain, which is relieved when the vomiting has occurred. It seems to be independent of diet in the majority of cases. There is an absence of any sign of organic disease, though wasting to the extent of the loss of several stones in weight may occur. The examination by X rays after a barium meal shows nothing abnormal and the stomach empties at the normal rate unless vomiting occurs. Captain Reynell states that the diagnosis is not usually difficult and depends upon the persistence of the vomiting in the absence of signs of organic disease, especially where there is a history of gassing or emotional stress. He points out the importance of recognising the hysterical nature of the condition owing to the fact that in a considerable proportion of cases the vomiting persists indefinitely in spite of dieting and treatment by medicines or by rectal

feeding, which tend rather to prolong than to cure it. The treatment recommended by Captain Reynell is to impress upon the patient the fact that his case has been thoroughly investigated, and then to explain the origin of the symptom and to indicate that it has now become converted into a habit. If necessary, a stomach-tube is passed before meals for its suggestive effect upon the patient. He is told that it is a method which does not fail, and that it will depend upon him how often the tube need be passed. Captain Reynell found that the vomiting usually ceased after a week or ten days, and that in patients of superior intelligence it is frequently possible for a cure to be effected by psycho-therapy without the passage of a tube. He adds a note to his paper expressing the opinion that hysterical vomiting is frequently overlooked in civil practice, and that many cases of chronic vomiting are hysterical in nature. He goes so far as to maintain that it is probable that most, if not all, cases of the pernicious vomiting of pregnancy are purely hysterical. While we should not be prepared to subscribe to this view without further evidence, Captain Reynell's paper is interesting and suggestive, and should lead to a more careful examination of cases of persistent vomiting of obscure causation in civil practice, in order to eliminate the possibility he suggests of hysterical persistence of vomiting, originally of organic causation, when the primary cause has ceased to be operative.

THE LESSONS OF THE LOUSE.

IN a primitive society feeble folk survive the dangers which beset them either by means of a shyness which withdraws them from taking risks or by a parasitism which claims the protection of something stronger. Like the coney, the louse is a feeble folk which, unlike it, has established its survival by an extreme intimacy with man, and in so doing has come to have a bearing on public health which is only now becoming generally appreciated. Mr. Ll. Lloyd, Lieutenant. R.A.M.C. (T.), whose experience as chief entomologist in Northern Rhodesia entitles him to speak with authority on zoological subjects, deals with this feeble parasite and its menace to mankind in a book,¹ intended avowedly for the general reader rather than for the specialist, the great merit of which is the statement of ascertained facts in a form bringing out the practical hygienic lessons to be drawn from them. Slow, short-lived, and defenceless, the louse has nevertheless been man's close companion from prehistoric times, for Mr. Lloyd considers the body-louse and the head-louse to be slightly divergent forms of a parent species infesting primitive man in his naked and hirsute state. At what stage in its history the louse became the intermediary of pathogenic spirochaetes and other organisms is not dealt with by Mr. Lloyd, but would form a very interesting chapter in the history of parasitism. We do not even know whether the louse itself is only the innocent medium of these noxious wares or whether as middleman it derives any personal benefit from the traffic. The first great hygienic lesson which emerges from a study of the facts is that the parasite must be regarded with respect. For untold ages the louse has been the object of shame and jest, but not of serious study, and this unfortunate symbiosis of ideas has been singularly successful in keeping up the still more unfor-

¹ *Lice and their Menace to Man.* By Ll. Lloyd, R.A.M.C. (T.) With a chapter on Trench Fever by Major W. Byam, R.A.M.C. Oxford Medical Publications. 1919. Pp. 136. Price 7s. 6d.

fortunate physical symbiosis essential to its life. Even Mr. Lloyd has a special repugnance for the crab-louse which he describes as an "abominable" insect. Bacteriologists do not brand even the *Pleiffer bacillus*. But surely applied knowledge cannot fail to deal with a feeble creature which lives for but 40 to 50 days, has little or no means of finding a new host, and soon dies of starvation when removed from the human skin on which its normal habit is to dine at least four or five times a day. The second lesson is that of thoroughness. Although so easy to kill, dying at a mere touch, on being dried or slightly warmed the failure of even drastic methods applied without system to extirpate it has resulted in a deeply-rooted notion that the louse arises spontaneously from the ground. Our soldiers in the South African War shared this belief with the Egyptians of Pharaoh's time, before whose eyes the dust became lice. But disinfection—as the phrase now runs—is only a question of thoroughness. In the Army at first only the man's shirt was disinfested, leaving his other garments as a safe refuge for the parasite. Then the whole clothing was treated, overlooking the hair, in which lice or nits still lurked. And, finally, the failure to deal simultaneously with the whole body of troops resulted in the ready re-infestation of the disinfested section by adjacent and still infested men. It was on the Eastern front that this lesson was most strikingly illustrated by Colonel W. Hunter's great achievement with the Stammers method, in which men's kits by the ten-thousand were sterilised by live steam in a special railway van.² The problem, Mr. Lloyd tells us, is a difficult one to solve under civilian conditions, but it is through the diffusion of the knowledge acquired under war conditions that the solution will come. The clear and concise knowledge imparted in this book should greatly help the civilian campaign against the louse. An illustrated poster just issued by the British Museum of Natural History at South Kensington at one half-penny, entitled "The Louse Danger," will help in the same direction.

A CONFERENCE ON THE TUBERCULOSIS SERVICE.

THE larger aspects of the tuberculosis question were just beginning to be seriously faced when the European upheaval put an end to all constructive labours. The position has been rendered vastly more urgent by the war, and public opinion has become less tolerant of delay. On the Tuberculosis Service of the country will rest a very heavy responsibility in the years ahead of us. The Tuberculosis Society foresees the need of strengthening the hands of those on whom the responsibility will fall and has arranged for a conference to be held at the house of the Royal Society of Medicine, 1, Wimpole-street, London, W., at 7 P.M. on Saturday, Jan. 25th, to discuss the status of the Tuberculosis Service under forthcoming legislation. Matters coming specially within the limits of the discussion are the scope of the tuberculosis officer's work, his relation to the present Public Health Service, his remuneration, security of tenure and superannuation; and it is hoped that the discussion may lead to a comprehensive and united policy for the control and eradication of tuberculosis, and be attended not only by tuberculosis officers, in the strict sense, but also by medical officers of sanatoriums, open-air schools, farm colonies, and tuber-

culosis hospitals. Resolutions to be submitted to the conference will be based upon the memorial passed by the Tuberculosis Society in 1914 and submitted at the time to members of the Government. The claims then made were that tuberculosis officers should be regarded as an independent service so far as their clinical duties are concerned, and be responsible for the management of institutions to which they are attached; that a satisfactory status and security of tenure should be secured for them; that the Tuberculosis Service should not count as a subsidiary branch of the Public Health Service; and that security of tenure and superannuation should be ensured for its members comparable to those ruling in the Lunacy and Prison Services. We trust that the conference will herald the development of the united policy which its promoters foreshadow.

PROPHYLACTIC MEASURES AGAINST INFLUENZA AT A PUBLIC SCHOOL.

THE responsibilities of those in charge of institutions, particularly public schools, at the present time are heavy, and any statistical results of prophylactic measures adopted must be welcome. We publish in our present issue an interesting note by Mr. G. E. Friend, medical officer of Christ's Hospital School, West Horsham, to which we may draw our readers' attention. After a small outbreak in the summer term, to which we will refer later, measures were taken to minimise the risks of infection as far as possible. The school being self-contained and enclosed by a ring fence, Mr. Friend advised the headmaster at the beginning of the winter term to stop all leave and keep the boys strictly within bounds—walks outside being allowed, but the town, 2½ miles away, and all houses off the school estate were put out of bounds. Segregation was, however, only possible to a limited extent, since visitors could not be kept away, and large numbers came twice a week, some of them staying over the week-end; nor could all leave of absence be stopped. Non-resident masters and servants were also possible sources of infection which could not be prevented. The time allowed for sleep had previously been increased by one hour and the amount of work and play reduced. The nasal drill described in THE LANCET of August 24th, 1918, by Dr. Isabel Ormiston was carried out twice daily. A polyvalent influenza vaccine, unmixed with other organisms, prepared by Dr. E. L. Hunt, was given to about 77 per cent. of the boys in a single dose—boys over 14 years of age receiving 70 million, those under this age 30 million. In all, 633 boys were inoculated, 306 receiving the larger dose, and 327 the smaller. Only 39 boys' parents objected to inoculation, but 128 boys were considered unsuitable, and 19 boys were absent, ill, so that 186 boys were not inoculated. Only one definite case of influenza occurred during the term, and the cases of medical illness were less than in any term since 1898. The one case was that of a boy—inoculated with 30 million of vaccine—who went home to attend the funeral of his mother who had died from influenza. He developed coryza and cough and slight fever, and apparently suffered from mild influenza. In addition there were 36 cases of "chill" of very mild character which clinically could not be regarded as influenza, and they were not examined bacteriologically. Inoculation was only carried out on Oct. 30th—i.e., at about half term—and 12 of the cases of "chill" occurred before this date. Of the 24 cases occurring after

² THE LANCET, Sept. 14th and 21st, 1918.

inoculation 7 were among the uninoculated—i.e., 4.2 per cent., and 17 among the inoculated—i.e., 2.6 per cent. From September onwards influenza was very prevalent in Horsham and in all the surrounding villages. About 18 cases, 3 of them complicated by pneumonia, occurred among the staff, and these were at once isolated. Mr. Friend attributes the gratifying freedom from influenza among the boys to physical training, nasal drill, an increase of the caloric value of the diet, and to the inoculation. To this we may add that prompt isolation of the cases occurring among the staff was also no doubt a valuable precaution. It is somewhat difficult to appraise the actual value of the inoculations owing to the absence of any outbreak of the disease among the boys from the success of the general measures adopted.

A small outbreak in the summer term mentioned by Mr. Friend is worth a brief reference. In the ten days previous to July 20th 21 cases of mild influenza occurred in various houses of the school. On the date just mentioned the cricket eleven went to Brighton to play a match. Next day five of the team were admitted to the infirmary, together with three other boys who were not in the team, but came from the same houses. Within the next four days 31 other cases were admitted, nearly all from the houses which had supplied the cricket team. Mr. Friend attributes this outbreak of 39 cases to the Brighton visit of the cricket team rather than to the 21 mild cases previously present. We do not feel quite convinced of the correctness of this explanation, since it involves a very short incubation period even for the five members of the cricket eleven, and an even shorter one for the three boys who were admitted to the infirmary on the same day, who must on this supposition have been infected by the five players during the early part of their incubation period. We may recall the interesting observations published by Major Michael G. Foster and Major H. Anstey Cookson in THE LANCET of Nov. 2nd, 1918, in which the incubation period of influenza seemed to be about 48 hours.

Sir David Bruce has been elected a Correspondent of the Académie des Sciences.

Sir Anthony Bowlby will deliver the Hunterian Oration at the Royal College of Surgeons of England on Friday, Feb. 14th, at 4 p.m.

AFTER having completed 20 years' service on the full staff of St. George's Hospital, according to the regulations, Sir Humphry Rolleston has ceased to be physician to the institution. But instead of automatically becoming consulting physician, which up to the present time has been the unbroken rule of the hospital, the house committee, on the recommendation of his colleagues, has appointed him emeritus physician for his lifetime, with the privilege of using the clinical material in the wards for teaching.

THE LANCET, VOL. II., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET which was completed with the issue of Dec. 28th, 1918, is now ready. Subscribers who bind up their numbers are requested to send a *post-card* (which is more convenient for filing purposes than a letter) to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2, when a copy of the Index and Title-page will be supplied free of charge.

MEDICINE AND THE LAW.

The Irregular Sale of Poisons.

AT a recent inquest upon a police superintendent at Hemel Hempstead the evidence showed that the deceased, who had had to give up his position owing to his period of service having come to an end, had taken his life with prussic acid, and that he had been able to purchase the drug without complying with the regulations imposed by the Pharmacy Act. He had told the druggist who sold it to him that he wanted it in order to kill a dog, and the druggist, according to his own version of the transaction in the witness-box, had "presumed he would be all right in serving the police." The witness in question will no doubt have received a lesson which he will never forget, and in future will carry out to the letter any legal enactments which may affect his business. Probably he disregarded it in this instance because he thought that the local police superintendent was one who, of all others, would not be likely to make an improper use of his purchase, but he might have remembered that he was also the last person who should have tempted him into an irregularity such as he committed. The sale of dangerous drugs in contravention of the law which seeks to restrict and to supervise such transactions, no doubt, takes place not infrequently, and recent cases have shown that in relation to some drugs, after they have left the hands of the legitimate retailer, a substantial profit may be made by surreptitiously disposing of them. At another inquest, held at Isleworth, it was shown that the deceased, an elderly woman, experienced no difficulty in obtaining morphia from a firm of druggists in London by sending a succession of written orders, and that she received it in quantities of about 45 grains, one consignment lasting her for not more than three days. A prescription was mentioned as having been used by her, but particulars of it were not given. Her way of taking the drug was to moisten a finger with saliva, draw it across the packet of powder, and suck it. The medical officer of the infirmary in which the woman died ascribed death to valvular disease of the heart and congestion of the lungs, expressing at the same time an opinion that it had been accelerated by chronic morphia poisoning. The coroner observed that the druggist had been "very slack—to put it no higher."

Medical Practitioners and the Detection of Crime.

IT is to be hoped that the publicity given by the newspapers to the case of William Henry Gordon, described as an analytical chemist, with an address in Pall Mall, will be a useful lesson to druggists and others that the treatment of venereal diseases has been directly entrusted to the medical profession by the Venereal Diseases Act, 1917, and that in areas where that Act is in force there are heavy penalties provided for unqualified persons who attempt to administer such treatment. Gordon, it will be remembered, was recently sentenced by Mr. Denman at Marlborough-street police-court to pay a fine of £100 and £21 costs, or, in default, to undergo imprisonment for three months for having prescribed treatment and given advice to a member of the police force who was in good health and who had been sent to him for the purpose of detecting and convicting him. The sentence was well deserved, and Mr. Denman intimated that a more severe one would have been passed if another case mentioned had been proved before him, in which a person who had visited Gordon as a bona-fide patient was stated to have been treated by him as if for venereal disease, although, in fact, he was as free from it as was the police detective. The case upon which the conviction took place was, in short, a well-laid trap which will have had a desirable effect if it has procured the punishment of an offender, and if at the same time it serves as a warning to others. It has been, moreover, the result of action on the part of the National Council for Combating Venereal Diseases, whose late honorary medical secretary, Dr. Otto May, arranged the introduction of the police detective to Gordon, giving him a letter which he presented on his first visit to the defendant's office. In congratulating the National Council for Combating Venereal Diseases on its success we venture, however, to express a doubt as to the desirability of a member of the medical profession intervening directly in the detection of offenders in this or in other classes of criminal acts. We do

not question that Dr. Otto May, actuated by a sense of public duty, brought about with certainty a conviction which it was desirable to secure without failure through the omission of any detail. We are, nevertheless, of the opinion that medical men on such occasions are entirely within their proper sphere in giving necessary scientific evidence after qualifying themselves to do so by observation of the facts relevant for that purpose, and that by going further than this they travel out of that sphere without the justification that their action is necessary and indispensable. In other words, there are functions, such as acting when suitable the part of the *agent provocateur*, which rightly are performed by the police as everyday official duties and which are best left to them. If we were to hold as a matter of principle that a medical man should be willing, at the request of the police, to introduce a supposed patient to someone who in the name of medicine was likely to attempt a crime, one more step would take us to the point where such action would be looked upon as obligatory. The nature of the criminal offence is immaterial, but a parallel may be drawn between the treatment of venereal diseases and the more serious case of abortion. We can well imagine an occasion when a man suspected of procuring miscarriage in pregnant females might usefully be brought to justice by means of a sham subject employed by the police. Such a man might be a member of the medical profession, a regrettable black sheep whom many of his colleagues would gladly see brought to book. We should not, however, regard it as desirable that the actual bringing of the supposed pregnant woman into touch with the suspected person should be the work of a medical colleague. And yet the fact of the suspect being a medical man would not affect the question of his being a person whose detection was desirable, and in conceivable circumstances such an introduction of the supposed patient as we have suggested might be extremely effective in bring about that end. We prefer, nevertheless, to distinguish in such matters between the duties of those professionally entrusted with administering and enforcing the law, and duties which devolve upon medical men as citizens invited to assist in a limited degree in deference to their special qualifications for so doing.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Irish Medical Committee.

A MEETING of the Irish Medical Committee was held early in the month to discuss various matters affecting medical interests in Ireland. Mr. R. J. Johnstone, of Belfast, and Dr. Joseph Power, of Co. Tipperary, were re-elected chairman and vice-chairman respectively. Several grievances arising out of the working of the National Health Insurance Act were discussed, and the attention of the Commission was directed to be drawn again to the continued impropriety of permitting the Approved Societies to appoint the medical referees who are paid out of public funds. The Commission in 1915 pledged itself that it would retain all such appointments in its own hands. The opinion was expressed by the Committee that the remuneration for certification was, under present conditions, quite inadequate. The Committee considered the failure of many Poor-law unions to adopt graded scales of salaries for their medical officers, and decided to press the Local Government Board to use their powers to fix adequate salaries in the case of such unions. The probability of the Irish Government proceeding to introduce a Health Reform Bill for Ireland was also discussed by the Committee, and a watching committee was appointed to report any information that might be gained as to the intentions of the Government.

The Ministries of Health Bill.

All those who have the true interests of Ireland at heart were surprised to learn, on the introduction of the "Ministries of Health" Bill last session, that it did not apply to Ireland, and in a speech delivered in Belfast on Nov. 15th, 1918, Sir Edward Carson, M.P., said that as soon as he learned from Dr. Addison, M.P., that Ireland was to be excluded he put down immediately a resolution to move that the House of Commons refuse to go on with the Bill until Ireland was included. Ireland may have been excluded either on political or non-political grounds. In a medical journal I do not enter into controversial matters like politics,

further than to say that surely—even in a divided country like Ireland—people might agree on a question affecting their health, no matter what religious or political opinions they held. Yet what non-political reasons could be assigned for keeping Ireland out of a health measure, except that, owing to the backward state of public health in that country, it could not be treated simultaneously in the same way as England and Scotland? And so Ireland must have a measure for herself alone. For many reasons, in both Scotland and England, public health is half a century in advance of what it is in Ireland, where there are full-time officers of health only in the few county boroughs, while in the whole country there is not a county medical officer of health. There are no primary school boards, with the result that medical inspection of schools does not exist, and in the Insurance Act medical benefits in Ireland are conspicuous by their absence; while a Central Midwives Board was established in England in 1902 and in Scotland in 1915, the Irish Board came into existence only towards the end of 1918 and is not yet in full practical activity. If ever there was a country which needs a thorough reorganisation on modern lines of its public health conditions it is Ireland, and it is, therefore, to be hoped that when the new measure so much talked of at present—to co-ordinate health departments—is introduced, it will either include Ireland or give us a separate measure dealing with our country.

The Salaries of Dispensary Doctors.

The dispute between the dispensary medical officers and boards of guardians in reference to increase of salaries is rapidly approaching a crisis in the north of Ireland. At Derry the matter is still unsettled, and at Ballymena no action was taken on Jan. 4th, although a week later the guardians yielded to a threat of resignation. At Coleraine on Jan. 4th a letter from Dr. H. S. Morrison, secretary to the County Medical Committee, to the effect that he was instructed to say that the proposed scale of increase passed by the guardians was inadequate, making the initial salary £125 instead of £100, rising to £175 instead of £150, with special scale for the Coleraine Dispensary of £150 of initial salary, rising to £200, was marked read, and no satisfactory arrangement has been made. At Omagh the Local Government Board have sanctioned the increase of salaries of each of the medical officers of the union from £100 to £140 and the granting of three quinquennial increments of £10 each till a maximum of £170 is reached. The Belfast guardians are to consider the question of the request of their medical officers for an increase in their salaries at a special meeting.

Health of Belfast.

At the January meeting of the Belfast City Council, in seconding a resolution to the effect that the Infectious Disease Notification Act, 1889, shall apply in Belfast to the disease known as septic pneumonia (i.e., influenza), Mr. J. H. Stirling, a leading councillor, blamed the health authorities for taking no action until Dec. 7th last, and pointed out the admitted want of knowledge of the medical profession as to the nature of the epidemic or as to its real causation. It appears that the deaths for the four weeks ended Dec. 14th, 1918, were 863 from all causes, and of these 250 were attributed to chest affections. In reply, the chairman of the public health committee took the line that it was no part of the duty of the Belfast public health committee to set up a department of research to find out the cause of influenza, which, he declared, was entirely outside their jurisdiction. Their duty was to administer the law, and it was for the Universities or the Government to undertake research work. In other words, notwithstanding the fact that the Belfast City Council have a medical officer of health, a pathologist, a tuberculosis health officer, and numerous doctors (all paid) engaged at centres for child welfare, and with the rates of the city for public health work steadily rising, the whole business they are to do is, according to the chairman of the public health committee of the city of Belfast, to administer the law. Is it any wonder that in Belfast for 1918 we have a high general mortality rate and high rates for tuberculosis and infantile mortality? "To administer the law," says the chairman of the public health committee of the great city of Belfast, is all the duty that the health authority has to do. Let others bother themselves about the research work necessary to find out the cause and, as a natural corollary, the means of preventing and treating disease.

The War and After.

THE CASUALTY LIST.

FOR the first time for very many weeks past we have not to make any announcements of casualties amongst the members of the medical profession engaged in the war.

We are glad to learn from Dr. J. S. Martin, late Captain, R.A.M.C., of Leigh, Lancs, that he is not the Capt. J. S. Martin, R.A.M.C., who was officially reported to have died in the casualty list issued from the War Office on Friday, Jan. 3rd, and published in THE LANCET of Jan. 11th.

OBITUARY OF THE WAR.

JAMES THOMAS MCENTIRE, M.B., CH.B., D.P.H. DUB.,
MONS STAR; LÉGIION D'HONNEUR;
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel J. T. McEntire, who died of pneumonia following influenza at Salonika on Oct. 29th, was eldest son of the late Alexander Knox McEntire, J.P.,



B.L., official assignee in Ireland. Educated at St. Andrew's College, Dublin, he graduated at Trinity College and took the B.A. and M.B. degrees in 1902 and the D.P.H. in 1911. He joined the R.A.M.C. in 1903, and served in South Africa for five years and on the West Coast of Africa for two years. He went to France from Ireland in 1914 with the original expeditionary force and received the Mons Star. In recognition of his work in the early fighting, in which he was

often in positions of great danger, the French Government conferred on him the Legion of Honour after the first battle of Le Cateau. He was further mentioned in despatches on three occasions. In 1917, after a short rest at home, he was sent to Salonika in charge of the surgical division of a general hospital, and early this year was given command of a stationary hospital, with the acting rank of Lieut.-Colonel.

Colonel McEntire married Mary, daughter of the late James Little, of Dumfries, N.B., and leaves one daughter.

HENRY PARKS WHITWORTH, M.R.C.S. ENG.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain H. P. Whitworth, who died on Oct. 29th from wounds received 12 days previously, was second son of the late Wm. Whitworth, M.R.C.S. Eng., of St. Agnes, Cornwall. Educated at Epsom College and Guy's Hospital, where he played in the Rugby team during the seasons of 1912-13 and 1913-14, he qualified in 1914, taking the diplomas of the Conjoint Board, and then held several house appointments at his hospital. He joined the R.A.M.C. the same year and was posted to the 26th Field Ambulance. After being severely wounded during the first battle of the Somme in 1916 he

again went to France in 1918 and was attached to the 6th K.O.S.B. Whilst attending to his patients during the advance through Belgium he was wounded in the head and died in a casualty clearing station near Ypres.



GEORGE ELPHINSTONE KEITH, M.B., C.M. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain G. E. Keith, who died in Italy of pneumonia following influenza on Dec. 6th last, at the age of 54 years, was youngest son of the late Dr. Thomas Keith of Edinburgh. Never robust, he spent a year on a ranch in Texas before graduating at Edinburgh in 1887. He held appointments in Edinburgh under the late Professor Annandale, and in the following year went to New York, where, after taking the M.D. degree at the Long Island College, Brooklyn, he became house surgeon at the Woman's Hospital, and there came in close contact with the leading gynaecologists of America. Before settling down in Manchester-square, London, where he devoted himself more especially to midwifery, he accompanied Lord Randolph Churchill when he went round the world in his vain search for health. He was part author of a text-book on abdominal surgery,



and for 10 or 12 years had devoted a large part of his time to the treatment of cancer by injection, the early account of the work being contained in "Cancer; Relief of Pain and Possible Cure." He joined the R.A.M.C. in July, 1915, and was promoted captain in 1916. Although over age, he served with the Expeditionary Force in France and Italy, and was one of the medical officers on the *Britannic* when she was torpedoed in the Aegean Sea. Captain Keith was unmarried.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Lieut.-Col. G. Buckston Browne, D.S.O., R.F.A., died of pneumonia, son of Mr. G. Buckston Browne, of Wimpole-street, London, W.

THE HONOURS LIST.

The following appointments of medical men to the Most Excellent Order of the British Empire for services in connexion with the war are announced:—

K.C.B.E.—E. N. Burnett, J.P., Chairman of the Economic Committee of the Army Medical Department, War Office; G. A. O'B. Reid; Col. W. H. White, R.A.M.C., Chairman and Consultant, Queen Mary's Royal Naval Hospital, Southend.

C.B.E.—H. H. Dale, F.R.S.; A. Elchholz, Senior Assistant Medical Officer, Board of Education; S. Lyle, Commissioner of Medical Services, Ministry of National Service; Col. W. G. Beyts, A.M.S., Assistant Director of Medical Service, Bombay Brigade; Lt.-Col. E. L. Ward, I.M.S., Inspector-General of Prisons, Punjab.

O.B.E.—A. M. Elliot, Headquarters Medical Examiner, British Red Cross Society; A. C. Ferguson, Commandant and Medical Officer, Thirsk Auxiliary Hospital, Yorkshire; J. T. Grey, Donor and Medical Officer, Stanmore House Auxiliary Hospital, Lenham; R. W. Johnstone, Commissioner of Medical Services, Ministry of National Service; J. R. Lunn, Commandant, "The Cecils" Auxiliary Hospital, Chappell Croft, Sussex; H. A. Macewen, Medical Inspector, Local Government Board; Capt. L. E. C. Norbury, Surgeon, British Red Cross Hospital, Netley; Maj. D. V. Rees, T.D., Operating Surgeon, Brecon and Bulthorpe Auxiliary Hospitals; C. Reid, Deputy County Director, Staffordshire Branch, British Red Cross Society; E. C. Roberts, J.P., Senior Medical Officer, Grovelands Auxiliary Hospital, Southgate Middlesex; Maj. C. S. de Segundo, V.D., Deputy Commissioner of Medical Services, Ministry of National Service; P. G. Selby, Medical Officer, Auxiliary Hospital, Sittingbourne, Kent; G. R. F. Stilwell, Medical Officer, Balgowan Auxiliary Hospital, Beckenham, Kent; G. M. Winter, J.P., Chairman, Torquay Food Control Committee; Lt.-Col. F. S. C. Thompson, I.M.S., Superintendent, Presidency Jail, Bengal; F. C. Madden, Senior Surgeon, Kasr-el-Ainy Hospital, Egypt.

M.B.E.—J. Adams; W. S. Aslett, Medical Officer, Knighton Auxiliary Hospital, Leicestershire; W. Baigent, Officer in Charge, Northallerton Auxiliary Hospital, Yorkshire; G. S. Brock, British Red Cross Hospital, Italy; J. Culross, Medical Officer in Charge, Newton Abbot Auxiliary Hospital, Devonshire; G. Hovle, Commandant, The Plains and Brooksbank Auxiliary Hospital, Elland; H. F. Powell, late Transport Officer, Cheltenham Group of Hospitals; J. Simcock, Assistant County Director for Heston Chapel Division, Lancashire Branch, British Red Cross Society; J. C. Smyth, Commandant and Medical Officer, Fairfield Auxiliary Hospital, Malvern; J. Wallace, Commandant, Ashcombe House Auxiliary Hospital, Weston-super-Mare; C. H. Lincoln, Acting Consul, Mohammerah, Persian Gulf.

Correspondence.

"Audi alteram partem."

ETIOLOGY OF LINGUAL CANCER.

To the Editor of THE LANCET.

SIR,—Your annotation on the above subject appearing in THE LANCET of Jan. 11th, in connexion with Mr. D'Arcy Power's Bradshaw lecture, is of the highest interest to the medical and general public, since it contains a grave warning, and prophesies a great increase in the disease unless measures are taken to deal adequately with the predisposing and exciting causes. Mr. Power concludes that syphilis cannot be considered more than the predisposing cause, and he suggests that the increased smoking prevalent in both sexes is the exciting cause.

As to Mr. Power's first conclusion, we know that even extremely severe types of gummatous tongue of long duration may not always develop into carcinoma; and as to tobacco being the exciting cause, as is pointed out, there must be at least another factor, at present unknown. Otherwise, why are not all excessive smokers (or at least a far larger proportion than is the case) also victims of the disease?

In discussing the etiology of lingual cancer it might be well to remember that with but few exceptions, notably that of new growths, affections of the tongue have hitherto been rightly regarded as merely symptomatic of general, or local, disease originating elsewhere, and that there is an intimate, though still obscure, relationship, anatomical and physiological, between the tongue and the stomach, or gastro-intestinal system, the state of the tongue—e.g., the presence of fur, dryness, moisture, swelling, &c.—being a useful index to the presence of various febrile or gastro-intestinal disturbances.

Further investigation may show that we have been mistaken in excluding from this list of diseases, arising from disturbances elsewhere, new growths of the tongue, which, after all, may prove to be due to some cause primarily affecting the stomach. Has the state of the gastric juice in lingual cancer been recorded? In investigating the etiology of lingual cancer, therefore, I urge a closer scrutiny of, and comparison with, the etiology of peptic ulcers, of which condition clinically I have had considerable experience.

We know from Dr. Charles Bolton's experiments that gastric ulcers can be produced by certain toxins, but do we know exactly how, in "atonic dyspepsia," the apparently analogous condition in the tongue, peptic ulceration, arises? Clinically, in my experience, this condition is especially associated with "starchy dyspepsia," an inability to digest certain starches (especially of potato, peas and beans, corn-flour, &c.), and with mental and emotional strains, overwork, and anxiety. Closely allied to this is the question of the "sore tongue" known to smokers, and hitherto generally attributed by them to the tobacco itself.

A prolonged consideration of the etiology of peptic ulcers of the tongue inclines me to think that though the acid and very strong tobacco used by the poorest classes can and does produce ulceration of the tongue, the ordinary and milder tobaccos smoked by the majority in pipe and cigarette are probably far less frequently the cause of the sore tongue occasionally experienced, and attributed to it, than is some other associated but less obvious condition—namely some slight gastric disturbance. Let me illustrate this by quoting an experience which must be familiar to most smokers dwelling in towns.

The late Marcus Beck, professor of surgery in University College, London, often used to remark that he suffered from a sore tongue if he smoked much in London, whereas, using the same tobacco, he could smoke all day, unaffected in this way, when holidaying and out on the moors all day. Here is a case where the same quality of tobacco produces different effects according to the smoker's general condition, which when poor more often than not manifests itself by a more faulty digestion than otherwise. With the relief of mental and physical strain the gastric metabolism is better and no sore tongue occurs.

Is it not reasonable, therefore, to consider that the sore tongue of smokers is essentially, or etiologically, to be henceforth regarded as a peptic ulcer due to overlooked or unsuspected, because perhaps mild, gastric disturbance occurring

in jaded town-dwellers? If so, perhaps in the sore tongue of smokers we may have a clue which may lead us to the discovery of the real cause of lingual cancer.

In conclusion, I suggest (1) that the trophic nerves governing gastro-intestinal metabolism, when exhausted by mental or emotional strain, give rise to the secretion of abnormal gastro-intestinal juices, which are unable to digest certain starchy foods, particularly potatoes, peas, and beans, and the absorption of the toxins arising from subsequent fermentation results in peptic ulcers of the tongue; (2) that the sore tongue of smokers (with the exception named previously) is due to associated mild gastric disturbance of the same kind; and (3) that these considerations as to the etiology of peptic ulcers may provide an important clue to the etiology of lingual cancer.

Even if my conclusions are shown to be unfounded, a discussion, focussing the experience of medical observers everywhere, cannot but be of the greatest assistance to future investigators.—I am, Sir, yours faithfully,

Harley-street, W., Jan. 12th, 1919. HENRY CURTIS, F.R.C.S.

CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—Mr. R. Denison Pedley asks me to furnish some evidence of my statement "that there are among the inhabitants of this country more than 200 million carious teeth, as many alveolar abscesses (pyorrhœa alveolaris), and some 30 million root abscesses." Taking the population of the United Kingdom as 45 millions, this, according to my estimate, implies for each individual $4\frac{1}{2}$ carious teeth, $4\frac{1}{2}$ alveolar abscesses, and 2 root abscesses for every three persons. Does this estimate strike Mr. Pedley as excessive?

I have before me Dr. James Wheatley's 1914 report to the Education Committee of the Salop County Council, and an excellent report it is. Referring to his investigation into the prevalence of dental caries among elementary school children, he writes:—

"The figures have been in such close agreement each year that it appears certain that they may be taken as an accurate description of the amount of dental caries amongst the elementary school children of the county. The striking points are: (1) That only 3 per cent. of the children at age 12 and 5 per cent. at age 5 were free from caries; (2) that the average number of decayed teeth at the age of 5 was 6.8 and at the age of 12 was 4.8; (3) that out of 3794 children examined at the age of 5 no less than 1017 had ten or more decayed teeth, and out of 3580 children at 12.876, had seven or more decayed teeth."

When we come to examine adults we find that a considerable proportion of carious teeth have been extracted owing to the trouble they have caused, so that the number of carious teeth in a given mouth does not represent the number of permanent teeth which have become carious within it. Similarly, in regard to pyorrhœic alveoli, the number present does not take account of those which have closed up in consequence of extraction or spontaneous shedding of the teeth. The number of teeth spontaneously shed as the result of pyorrhœa is enormous, embracing as it probably does all those which are shed as the supposed result of senile decay. In other words, the edentulism of the aged is essentially pyorrhœic in origin.

In order to provide Mr. Pedley with figures I have hastily examined the teeth of 17 men, mostly discharged soldiers, occupying one of the wards of the West End Hospital for Diseases of the Nervous System. Their ages range from 21–43 years, and they come from various parts of England. I found the pyorrhœa average to be 9 (i.e., double my estimate), and the caries average to be 3 (i.e., one-third below my estimate).

Since pyorrhœa alveolaris is practically limited to adults, the average number of purulent alveoli in adults would need be considerably higher than $4\frac{1}{2}$ (as it actually is in the series examined), in order to bring the average of the total population up to this figure. The caries average in my series would have been much higher but for the large number of extractions—i.e., 9 per individual. Had no carious teeth been removed the average would have been 12 (i.e., more than double my estimate).

I have no statistics to give regarding root abscesses. I shall be surprised, however, if the estimate of two such abscesses for every three persons is regarded as excessive by dental surgeons. I am, Sir, yours faithfully,

Cavendish-square, W., Jan. 11th, 1919. HARRY CAMPBELL.

CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—I am glad your columns are being used to emphasise the connexion between soft, sugary, or starchy food and decay of the teeth. School clinics are doing much to cure and prevent caries at school age, but why should it be allowed to occur at all? Nature shows that the young animal should pass from its mother's milk to hard food, which keeps the teeth clean and exercises the jaws, and that with such diet animals rarely get caries. Museums show that caries is exceptional in uncivilised man. Yet our mothers are still, with medical approbation, encouraged to feed their babies as the teeth emerge on soft, sweet food, with its inevitable consequences of contracted jaws and decaying teeth.

Dr. Sim Wallace has shown that caries may be largely prevented without altogether imitating Nature if every meal is completed with a detergent food. If it is not practicable to revert to a diet which will produce a larger jaw and better developed teeth we may at least follow Dr. Wallace's teaching sufficiently to greatly diminish the occurrence of caries with all the suffering and ill-health which go along with it. The matter is largely in the hands of the medical practitioner.

I am, Sir, yours faithfully,

Woolwich, Jan. 8th, 1919.

SIDNEY DAVIES.

AUTOTHERAPY OR BLEEDING.

To the Editor of THE LANCET.

SIR,—A new line of treatment is suggested in the annotation in THE LANCET of Dec. 28th, 1918, p. 889, on Dr. Luigi Meille's method of treating influenza by subcutaneous injection of the patient's serum, presumably containing antitoxins. Having tried this practice without beneficial results in another disease, I beg leave to record a negative observation. Two years ago, assuming that opsonins are free in serum, I withdrew 50 c.cm. of blood from a tuberculous patient showing severe intermittent pyrexia. Blood was run direct from the median basilic vein into a sterile flask and left to coagulate for 24 hours. Most of the serum was recovered and injected into the patient's groin. This was done twice with an interval of ten days. After withdrawing the blood there was a transient fall in temperature and in pulse-rate, but as the actual injection of serum had no influence on the disease, and as blood-letting is generally contra-indicated in pulmonary tuberculosis, the practice was abandoned.

May I also suggest that Dr. Meille's results were possibly due to the bleeding and not to the serum, and that the practice of bleeding, so universal in the past, may have some advantages over our indirect modern methods of reducing engorgement of arteries or veins. Until the middle of last century even healthy adults were regularly bled, and, according to Sir James Paget, "not one of these persons suffered harm." Again, Sir Thomas Watson considered venesection to be "a potent and life-preserving remedy" in many diseases. According to Quain, blood-letting in the early stages of pneumonia "relieves pain, abates fever, and, if it does not arrest the disease, it certainly appears to lessen its duration." Curiously enough, this author states that physicians first learnt that blood-letting was not a universal panacea during the influenza epidemic of 1830.

I am, Sir, yours faithfully,

London, Dec. 29th, 1918.

HALLIDAY SUTHERLAND.

PURULENT BRONCHO-PNEUMONIA ASSOCIATED WITH THE MENINGOCOCCUS.

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 11th "Bacteriologist" deals somewhat harshly with a short description I gave in THE LANCET of Dec. 28th, 1918, of "Six Cases of Purulent Broncho-pneumonia Associated with the Meningococcus." He states that this title is "wholly misleading," although I purposely used the words "associated with." Apparently he considers them synonymous with "caused by" or "due to." When, after summarising the facts, I gave what appeared to me the probabilities, I was most careful to commence by saying it was only my opinion. I make no

pretence to "bacteriological proof," nor is this to be wondered at, seeing that three of the six patients were dead and the other three entirely convalescent at least a fortnight before I heard of them.

I published the notes because the series of cases, and their sequel in the occurrence of a case of cerebro-spinal fever, appeared to me so suggestive in the light of other reports, not yet published, as to be quite worth recording. That the meningococcus does cause pneumonia in certain cases is believed by many,¹ but this little series of cases which I have been able so imperfectly to investigate becomes especially interesting if viewed in the light of information derived from such an outbreak as that at Colmar in January, 1906, which is fully described by Jacobitz.² The outbreak occurred in one company of a Jäger Battalion. Twelve patients (other than carriers) were proved to be infected by the meningococcus, and Jacobitz divides his 12 cases into five groups, thus:—

1. Two cases showing typical cerebro-spinal meningitis without complications.
2. Three cases showing meningococcus pneumonia in association with meningitis.
3. One case of pneumonia without meningitis. The symptoms included pyrexia ending by crisis, rusty sputum, and signs of consolidation. Microscopic examination of the sputum showed only Gram-negative intracellular cocci, which were cultivated and identified as meningococci by agglutination. Meningococci were also present in the naso-pharynx, but pneumococci were never observed in the sputum in this case.
4. Four cases of bronchial catarrh without meningitis. These patients were only moderately ill, but the sputum showed numerous meningococci, which were cultivated and proved by agglutination. All had meningococci also in the naso-pharynx.
5. Two cases of lung infection in which the meningococcus was found mixed with other bacteria.

Referring to my own series, may I add that none of the three convalescents have proved chronic carriers, although when first examined they all showed almost pure and very abundant cultures. This disposes of the explanation that coincidence had brought together three chronic carriers of Type I. One of "Bacteriologist's" criticisms is just, I should not have mentioned Pfeiffer's bacillus.

I am, Sir, yours faithfully,

J. A. GLOVER,

Jan. 13th, 1919.

Captain, R.A.M.C.

* * Dr. Glover will be interested to read a short paper by Dr. William Fletcher, published in this issue.—Ed. L.

CROOKES'S LENSES.

To the Editor of THE LANCET.

SIR,—May I ask any of your readers to be so kind as to explain what are the special benefits which accrue to the use of Crookes's tinted lenses? Does their light-yellow tint merely cut off from the eye a small portion of the red and violet rays which go to make up white light? and, if so, would not any glasses of the same tint have the same effect? Or have they by their composition other properties than these, and, if so, what are they, and what is the construction of the glass which gives them these properties?

I am, Sir, yours faithfully,

Jan. 11th, 1919.

ENQUIRER.

* * In consequence of the prevalence of cataract amongst glass bottle makers researches were undertaken by Sir William Crookes some years ago into the possibility of obtaining glass opaque to the noxious ultra-violet and ultra-red rays and still transparent to light. In the course of his experiments a large number of metals were used, salts of which were incorporated in the experimental glasses, over 300 varieties being prepared. While none of them fulfilled the above conditions with perfection, some of them did very nearly, and the "No. 1" Crookes glass which is now supplied by opticians, while being practically completely transparent to light, does effectually cut off a very high percentage of both heat and actinic rays, and in this respect is superior to ordinary amber or smoked glass for cases in which it is desirable to protect the eyes from these rays without interfering with vision. Opticians also supply a "No. 2" Crookes glass which is partially opaque to light, suitable to be employed only in those cases where the amount of visible light is excessive. Sir William Crookes's own report on his experiments will be found in the Philosophical Transactions of the Royal Society for 1913.—Ed. L.

¹ Cf. Sophian, *Epidemic C.S.M.*, p. 55.
² *Zeitschrift für Hygiene*, Bd. lvi., 1907.

THE LATE HENRY SANDFORD.

To the Editor of THE LANCET.

SIR,—I have read with great regret your announcement of Mr. Henry Sandford's death. He was, I believe, the last survivor of those connected with THE LANCET, in any capacity, when I joined the staff 47 years ago. Mr. Potter, his senior partner, was then in the full vigour of bodily and mental health, but whenever he was unable to attend at THE LANCET Office "young Sandford," as he was then called, used to take his place.

By a melancholy coincidence Dr. Thomas Buzzard died a few days later than Mr. Sandford. With him passed away the last of the literary and editorial staff existing when I joined. At that time there were, in addition to Dr. James Wakley, Tilbury Fox (who acted as editor during Dr. James Wakley's illness), J. P. Steele, Brudenell Carter, James Grey Glover, Christopher Heath, Anstie, Henry Power, Jeffrey Marston, Harry Leach, Stallard, John Netten Radcliffe, Vivian Poore, and others whom at the moment I cannot recall. Thomas Henry Wakley, F.R.C.S., eldest son of the Founder of the paper, was at that time in charge of the business side of the journal. All these and a few others were, I remember, at the Jubilee Dinner of THE LANCET in 1873.

It is with pleasure I notice the continued vitality and prosperity of THE LANCET.

Wishing you a happy and prosperous new year,

I am, Sir, yours faithfully,

Harley-street, W., Jan. 6th, 1919.

JOHN TWEEDY.

Obituary.

WILLIAM ASHTON ELLIS, M.R.C.S. ENG.

Mr. W. A. Ellis, who died on Jan. 2nd, aged 66 years, was son of the late Robert Ellis, M.R.C.S., of London. Educated at Westminster (1865-1870), where he won a Queen's scholarship in 1867, he entered St. George's Hospital in 1871, took the M.R.C.S. in 1876, and the L.R.C.P. in 1878. He is chiefly to be remembered as a Wagnerian scholar; for some years he edited *The Meister* (quarterly journal of the Wagnerian Society), and he was the author of "Richard Wagner's Prose Works," in eight volumes, and of a life of Wagner in six volumes. Soon after qualification he had acted as resident medical officer to the Western Dispensary, and during the war he had resumed his old post there. Mr. Ellis was formerly honorary secretary of the Association of Members of the Royal College of Surgeons of England, and during the latter years of the last century he was a prolific writer on the subject of reform of that body.

LAWRENCE HENRY BENNETT, M.A., M.B. OXON., M.R.C.S. ENG.

Mr. L. H. Bennett, who died suddenly on Dec. 28th at Paignton, was third son of Henry Bennett, of Westminster, Glos. Educated at Clifton (1877-80), he matriculated at Trinity College, Oxford, in 1880, at the age of 18. He took his B.A. degree in 1884, and entered at St. George's Hospital the same year, obtaining the qualification of the Conjoint Board in 1889 and taking the M.A., M.B., B.Ch. Oxon. in 1890. After serving as ophthalmic assistant and orthopaedic assistant at St. George's Hospital he settled in practice at East Ilsley, near Newbury, Berks, and later moved to Paignton, where he had an extensive practice.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS TO THE SECOND APPEAL.

The following subscriptions have been received up to Monday, Jan. 13th:—

| | £ s. d. | | £ s. d. |
|-----------------------|---------|-----------------------|---------|
| Mr. E. Spencer Evans | | Mr. J. F. Cownie | 1 1 0 |
| (monthly) | 0 10 0 | Dr. C. Buttar | 3 3 0 |
| American Red Cross | | Dr. Vincent S. Hodson | 1 1 0 |
| Commission for | | Dr. E. S. Green | 1 1 0 |
| Belgium (monthly) ... | 200 0 0 | | |

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Major (acting Lieut.-Col.) E. A. Davidson to be acting Colonel whilst employed as an Assistant Director of Medical Services of a Division.

Major C. W. O'Brien relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Major (acting Lieut.-Col.) H. F. Shea to be acting Colonel whilst specially employed.

Temp. Major C. H. G. Ramsbottom to be acting Lieutenant-Colonel whilst specially employed.

Capt. (acting Major) J. W. Bennett to be acting Lieutenant-Colonel whilst specially employed.

Temp. Capt. (acting Major) W. Kennedy-Taylor to be acting Lieutenant-Colonel whilst in charge of Guildford War Hospital.

Major C. P. Thomson is placed on the half-pay list.

To be acting Majors: Capt. R. A. Austin, D. W. Beamish, C. McQueen; Temp. Capt. R. Bruce Low, A. S. Wakely, A. G. M. Middleton, O. K. L. Wilson, J. R. Anderson, J. G. Moseley, H. J. de Brent, T. B. Amyot, J. McDonnell, A. R. Esler, W. L. Cassels.

Temporary Captains to be acting Majors whilst specially employed: S. B. Martin, J. C. Muir, F. R. Barwell.

Temp. Capt. J. Anderson, L. F. Hemmans, F. G. Bell relinquish the acting rank of Major on re-posting.

Temp. Lieut. T. A. Matthews and N. J. Newbould to be temporary Captains.

D. O. Parmenter to be temporary Honorary Lieutenant whilst serving with No. 22 General Hospital (Harvard Unit).

Canadian Army Medical Corps.

Temp. Capt. (acting Major) M. H. Allen to retain the acting rank of Major whilst employed in D.G.M.S. Office.

Hon. Capt. (acting Hon. Major) A. E. Clifton, D.C.M., to retain the acting rank of Honorary Major whilst employed as Inspector of Technical Equipment in D.G.M.S. Office.

Temp. Hon. Capt. J. W. White relinquishes the acting honorary rank of Major on ceasing to command a Depot.

SPECIAL RESERVE OF OFFICERS.

Capt. P. Walsh relinquishes the acting rank of Major on re-posting.

Captains to be acting Majors: S. K. Young, W. O. Tobias. Whilst specially employed: A. J. Brown, W. O. Mackie.

W. Oats to be Lieutenant.

TERRITORIAL FORCE.

Major (acting Lieut.-Col.) J. B. Yeoman relinquishes acting rank on ceasing to be specially employed.

Major W. R. E. Williams relinquishes his commission on account of ill-health.

Captains to be acting Majors whilst specially employed: R. E. Pitts, J. W. Wood, W. L. Cockroft, A. C. Tibbitts.

Capt. (acting Major) G. S. Williamson relinquishes his acting rank on ceasing to be specially employed.

Capt. L. E. H. K. Barker relinquishes his commission on account of ill-health contracted on active service.

Major A. M. H. Gray, Capt. A. E. Webb-Johnson, W. J. Wilson (Lt. Major), G. A. Williamson, Lieut. F. J. Cleminson (temp. Capt.) (retains his temporary rank) are transferred from the List of Officers Supernumerary for service with the Officers Training Corps.

Officers seconded for service with the R.A.F.: Major J. W. Keay, Capt. J. E. Dunbar, V. T. Ellwood, A. D. Kennedy, J. E. Lascelles.

1st Southern General Hospital.—Major W. Kirkpatrick to be acting Lieutenant-Colonel whilst specially employed, and to be seconded.

5th Northern General Hospital.—Capt. J. W. Patrick is restored to the establishment.

2nd London Sanitary Company.—Capt. (acting Major) F. S. Carson relinquishes his acting rank on ceasing to be specially employed.

1st Northern General Hospital.—Major (acting Lieut.-Col.) G. Hall, C.M.G., relinquishes his acting rank on ceasing to be specially employed.

1st Eastern General Hospital.—Capt. (acting Major) R. V. Slattery relinquishes his acting rank on ceasing to be specially employed, and remains seconded.

3rd Southern General Hospital.—Capt. W. B. Secretan is seconded for duty with the Reading War Hospital.

4th London General Hospital.—Lieut.-Col. Sir N. I. C. Tirard is retired on attaining the age limit, and retains the rank of Lieutenant-Colonel.

Major (Brevet Lieut.-Col.) Smart, from 1st Scottish General Hospital, to be Lieutenant-Colonel on the permanent personnel.

TERRITORIAL FORCE RESERVE.

Capt. E. S. Stork, D.S.O., from Attached to Units other than Medical Units, to be Captain.

Capt. P. C. Mitchell relinquishes his commission on ceasing to be employed, and retains the rank of Captain.

Lieut. G. T. Nichols and C. W. Stewart relinquish their commissions on ceasing to be employed, and retain the rank of Lieutenant.

ROYAL AIR FORCE.

C. G. Galpin (temp. Capt., ret. pay) is granted a temporary honorary commission as Major.

Capt. G. Fehrsen relinquishes his commission on ceasing to be employed, and retains his rank.

DEATHS IN THE SERVICES.

Surgeon-General Sir James Howard Thornton, on Jan. 6th, aged 85. He entered the I.M.S. in which his father was a major, in 1868, and the two served throughout the Indian Mutiny. The son then went to China, and was later wounded in action in the Khasia and Jyntia Hills campaign. He was chief medical officer in the Suakin and Hargara expeditions. He was five times mentioned in despatches, received four medals with seven clasps, the Khedive's star, the C.B., and was finally created K.C.B. in 1904. He retired in 1891 to settle at Hove, where he became a magistrate and a valued member of the town council.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Monday, Jan. 20th.

GENERAL MEETING OF FELLOWS: at 5 P.M.

Lecture:

Lieut.-Colonel Sir James Barrett, R.A.M.C.: The Management of Venereal Diseases in Egypt during the War (with illustrations).

Tuesday, Jan. 21st.

GENERAL MEETING OF FELLOWS: at 5 P.M.

Ballot for Election to the Fellowship. (Names already circulated.)

Thursday, Jan. 23rd.

GENERAL MEETING OF FELLOWS, at 5 P.M.

Discussion:

On "Shock," opened by Professor Bayliss, F.R.S., and Dr. Dale, F.R.S.

MEETINGS OF SECTIONS.

Wednesday, Jan. 22nd.

SURGERY (Hon. Secretaries—Y. Warren Low, Cyril A. E. Nitch): at 5.30 P.M.

Paper:

Major C. W. Waldron, O.A.M.C., and Captain E. F. Risdon, O.A.M.C.: Mandibular Bone Grafts.

To be followed by a Discussion on "Bone Grafting." Speakers:—Captain W. E. Galie, O.A.M.C., Major Naughton Dunn, R.A.M.C., Major Alwyn Smith, D.S.O., R.A.M.C., Major Robert Milne, R.A.M.C.

Cases will be shown at 5 P.M.

Friday, Jan. 24th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—G. E. C. Pritchard, H. O. Cameron, C. P. Lepage): at 5 P.M.

Cases:

Dr. F. J. Poynton: (1) Myoclonia Multiplex in a Girl aged 2½ years; (2) Pseudo-hypertrophic Muscular Paralysis.

Discussion:

The Etiology, Prevention, and Non-operative Treatment of "Adenoids," opened by Dr. Harry Campbell and Dr. Edmund Cantley.

Those wishing to take part in the Discussion are requested to forward their names to the Senior Hon. Secretary.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Six Hunterian Lectures on Phases in the Life and Work of John Hunter. The Lectures will be illustrated by Hunterian Preparations, Drawings, and Records:—

MONDAY, Jan. 20th.—5 P.M., Lecture I.—Prof. A. Keith: The Cradle of the Hunterian School.

WEDNESDAY—5 P.M., Lecture II.—Prof. A. Keith: The Rise and Decline of the Hunterian School in London.

FRIDAY—5 P.M., Lecture III.—Prof. A. Keith: The Time, Place, and Circumstance of John Hunter's Career in London.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 P.M., Wednesday, Friday and Saturday also at 10 A.M.

(Details of Post-Graduate Course were given in issue of Nov. 30th, 1918.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, Jan. 22nd.—4 P.M., Prof. I. W. Hall: Industrial Hygiene in Relation to War Strain and Technical Development.

Medical News.

UNIVERSITY OF LIVERPOOL.—The following have passed the January examination for the Diploma in Public Health: Shaikh Ghulam Mohamed, M.B., Ch.B., and Peter Paul Wright, M.B., B.Ch., B.A.O.

A SCHEME for establishing a chair of Mental Diseases at Edinburgh University has been approved by the University Court. The board of the Royal Edinburgh Asylum for the Insane has made the foundation possible by offering an endowment of £10,000.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A quarterly meeting of the Council was held on Jan. 9th, Sir George Makins, the President, being in the chair.—It was resolved to accord a vote of congratulation to Sir John Lynn Thomas on being made a Knight of the British Empire.—In accordance with the recommendation of the Museum Committee, it was resolved that the skeleton of the Greenland whale be taken down and placed in a room in the basement.—The best thanks of the Council were given to Mr. Alban Doran for presenting to the library five volumes of his literary contributions, together with five other volumes of pamphlets and articles mainly on anatomical

and gynaecological subjects.—The secretary reported that one dissertation on "Injuries and Diseases of the Pancreas and their Treatment," the Jacksonian prize-subject for 1918, had been received.—It was resolved that in pursuance of the action taken by the Council in 1915 the President be requested to represent to His Majesty's Government that in any legislation relating to the promotion of the public health provision should be made for ensuring an adequate supply of material for the anatomical and surgical instruction of students and practitioners of medicine.

URBAN VITAL STATISTICS.

(Week ended Jan. 11th, 1919.)

English and Welsh Towns.—In the 98 English and Welsh towns, with an aggregate civil population estimated at 18,500,000 persons, the annual rate of mortality was 16.0, against 14.8 and 16.1 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 15.8, or 0.8 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 7.9 in Walthamstow, 8.2 in Hornsey, and 8.3 in Ilford, to 22.7 in West Hartlepool, 23.7 in Hastings, and 27.3 in Liverpool. The principal epidemic diseases caused 164 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 64 from diphtheria, 46 from infantile diarrhoea, 17 each from measles and whooping-cough, 15 from scarlet fever, and 5 from enteric fever. The deaths from influenza, which had steadily declined from 7559 to 441 in the nine preceding weeks, further fell to 380, and included 68 in London, 56 in Liverpool, 19 in Birmingham, 18 in Manchester, and 14 each in Bristol and Leeds. There were 5 cases of small-pox, 1058 of scarlet fever, and 1139 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital; against 3, 1062, and 1116 respectively at the end of the previous week. The causes of 52 deaths in the 98 towns were uncertified, of which 10 were registered in Liverpool, 8 in Birmingham, 5 in London, and 3 each in Manchester, Gateshead, and Tynemouth.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 14.8 to 16.7 per 1000 in the three preceding weeks, further rose to 18.6 per 1000. The 399 deaths in Glasgow corresponded to an annual rate of 18.6 per 1000, and included 9 from whooping-cough, 5 from infantile diarrhoea, 3 from diphtheria, 2 from scarlet fever, and 1 from enteric fever. The 122 deaths in Edinburgh were equal to a rate of 18.9 per 1000, and included 11 from whooping-cough and 2 from diphtheria.

Irish Towns.—The 165 deaths in Dublin corresponded to an annual rate of 21.2, or 2.2 per 1000 below that recorded in the previous week, and included 2 from infantile diarrhoea. The 157 deaths in Belfast were equal to a rate of 20.4 per 1000, and included 2 from infantile diarrhoea and 1 from measles.

Communications, Letters, &c., to the Editor have been received from—

A.—Col. J. G. Adams, A.D.M.S.
B.—Dr. H. Brown, Lond.; Messrs. John Bell, Hills, and Lucas, Lond.; Dr. F. J. C. Blackmore, Lond.
C.—Dr. H. Campbell, Lond.; Col. S. L. Cummins, A.M.S.; Capt. J. Campbell, R.A.M.C.(S.R.); Mr. H. G. H. Clarkson, Birtwith; Dr. O. Coombs, Clifton; Dr. A. Cox, Lond.; Dr. S. Cheiliah, Colombo; Chicago School of Sanitary Instruction; Dr. J. A. Calantar, Lond.; Dr. C. M. Craig, Abergeldy; Dr. B. L. Collins, Lond.; Dr. R. Craig, Lond.; Dr. D. E. Core, Lond.; Mr. H. Curtis, Lond.; Mr. J. Cabburn, Lond.
D.—Dr. W. F. Dearden, Manchester; Dr. S. Davies, Lond.; Mrs. Duffy, Jesmond; Dr. J. N. Dyson, Eastbourne.
E.—The Misses Erwin, Lond.
F.—Capt. J. Fryer, R.A.M.C.; Mr. H. Faulds, Hanley; Capt. W. Fletcher, R.A.M.C.; Major E. E. Forthgill, R.A.M.C.; Surg. G. Findlay, R.N.; Lt.-Col. H. French, R.A.M.C.; Factories, Chief Inspector of Lond.; Capt. J. N. Ferguson, R.A.M.C.; Dr. A. W. Falconer, Aberdeen.
G.—Capt. J. A. Glover, R.A.M.C.; Dr. H. I. Goldstein, Camden, New Jersey; Lt.-Col. J. H. P. Graham, R.A.M.C.(S.R.)
H.—Dr. C. W. Hutt, Brighton; Mr. E. H. Hunt, Secunderabad (Deccan); Lt.-Col. A. F. Hurst, R.A.M.C.; Lieut. J. A. B. Hicks, R.A.M.C.
I.—Illuminating Engineering Society, Lond.
K.—Prof. A. M. Kennedy, Glasgow.
L.—London Units of the Scottish Women's Hospitals; Major J. R. Lee, R.A.M.C.; Local Government Board, Lond.; Mr. M. Little, Lond.
M.—Dr. R. Morton, Lond.; Dr. I. Moore, Lond.; Ministry of Munitions of War, Lond.; Capt. H. C. Martin, R.A.M.C.; Mr. A. P. Melville, Edinburgh; Mr. P. McBride, Edinburgh.
N.—Nursing Times, Lond., Editor of; National League for Health, Maternity, and Child Welfare, Lond.; National Food Reform Association, Lond.
O.—Oliver Pell Electric and Manufacturing Co., Lond.; Official Press Bureau, Lond., Director of; Mr. J. Offord, Lond.
P.—Dr. J. Pearce, Lond.; Major J. Parkinson, R.A.M.C.; Dr. H. R. Prentice, Lond.
R.—Mr. B. S. Rowntree, York; Royal College of Surgeons of England, President and Council of; Royal Institution of Great Britain, Lond.; Mr. P. B. Roth, Lond.; Dr. J. D. Rolleston, Lond.; Royal Sanitary Institute, Lond.; Capt. H. Robinson, R.A.M.C.; Mr. R. P. Ratnakar, Manchester; Capt. J. Ryle, R.A.M.C.(S.R.)
S.—Sir George Savage, Lond.; St. George's Hospital Medical School, Lond., Dean of; Mr. J. Singh, Nalla; Dr. P. L. Sutherland, Wakefield; Mr. A. B. Searle, Sheffield; Mrs. H. R. Spurrell, Lond.; Selborne Society, Lond., Gen. Sec. of; Mr. J. E. Sykes, Huddersfield; Dr. R. V. Solly, Exeter; Capt. J. L. Stoddard, M.C., U.S.A.
T.—Dr. J. Tatham, Oxford; Lt.-Col. E. N. Thornton, S.A.M.C.; Sir John Tweedy, Lond.
U.—University of Liverpool.
W.—Dr. S. A. K. Wilson, Lond.; West London Hospital Post-Graduate College; Western Chemical Co., Hutchinson, Minn.; Dr. F. J. Waldo, Lond.
Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Appointments.

ALLEN, V. F., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Swaffham District of Norfolk.
 CLEGG, S. J., M.D. Manoh., Deputy Medical Officer of Health for Newcastle.
 HACKETT, J. A. W., M.B., Ch.B. Edin., reappointed Medical Officer for the Gainsborough Urban District.
 HALL, ROBERT, L.R.C.P. Ed., L.R.C.S. & L.M. Ed., Examiner in Clinical Medicine in Belfast University, and Consulting Physician to the Ulster Volunteer Force Hospital for Discharged Sailors and Soldiers, Belfast (under Ministry of Pensions).
 HARGREAVE, W., M.B. Lond., and STEPHENSON, G. E., Captain, R.A.M.C., Police Surgeons for Newcastle.
 ROSS, D. M., M.B., Ch.B. Edin., Physician Superintendent, James Murray's Royal Asylum, Perth.
 SHARPLEY, J. E., M.R.C.S., L.R.C.P. Lond., reappointed District Medical Officer of the Blyborough District, Gainsborough Union.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Jun. H.S. £170.
 Birmingham General Dispensary.—Tuber. Officer. £800.
 Birmingham General Hospital.—Vacancies on Res. Staff.
 Bradford Royal Eye and Ear Hospital.—Ophth. S.
 Chichester, Royal West Sussex Hospital.—H.S. £180.
 Croydon County Borough (Ante-Natal Clinic).—Female Med. Prac. £1 ls. per session.
 Dorchester, Dorset County Asylum.—Second Asst. M.O. £300.
 Dorset County Council.—Temp. Asst. M.O.H. £400.
 East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. Res. M.O. £125. Also Casualty Officer. £120.
 Eccles and Paritcroft Hospital, near Manchester.—Res. H.S. £250.
 Edinburgh, Venereal Diseases Scheme.—Female Asst. M.O. £400.
 Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Temp. Asst. S.
 Exeter City Mental Hospital, Digby, near Exeter.—Asst. M.O. £300.
 Hellingly, East Sussex County Asylum.—Temp. Asst. M.O. 7 gs. per wk.
 Hull City Education Committee.—Asst. Female School M.O. £400.
 Manchester, Ancoats Hospital, Mill-street.—Hon. P.
 Monmouthshire County Council.—Female Asst. M.O. £400.
 North Edding Asylum.—Locum Tenens M.O. 7 gs. per week.
 Northampton County Borough.—Temp. Tuber. Officer. £400.
 Painsley Hospital, Lower Common, S.W.—Res. M.O. £150.
 Rochester, St. Bartholomew's Hospital.—Clin. Asst. £150.
 Royal Free Hospital, Gray's Inn-road, W.C.—H.P. £250. Casualty H.S. £100.
 Swindon Borough.—Asst. M.O.H. £500.
 Taunton, Taunton and Somerset Hospital.—Sen. H.S. £250.
 University of London.—Examiners.
 Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. £200.
 Western Ophthalmic Hospital, Marylebone-road, N.W.—Vacancies on Medical Staff.
 Westmorland Sanatorium, Meathop, Grange-over-Sands.—Sen. Asst. M.O. and Asst. Tuber. Officer. £350.
 Whitehaven and West Cumberland Infirmary.—Res. H.S. £150 to £180.
 The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Alford, Aberdeen; Heckington, Lincoln; and Ilminster, Somerset.

Births, Marriages, and Deaths.

BIRTHS.

ALTOUNYAN.—On Jan. 8th, at Hampstead, the wife of Captain E. H. R. Altounyan, R.A.M.C., of a daughter.
 CORFIELD.—On Jan. 12th, at Pembroke-road, Clifton, Bristol, the wife of Captain Charles Corfield, R.A.M.C. (T.F.), of a daughter.
 FAIRBAIRN.—On Jan. 8th, at Blackpool, the wife of Major J. Fairbairn, M.B., R.A.M.C., of a daughter.
 WILLIAMS.—On Jan. 8th, at Greystones, Canford Cliffs, Bournemouth, the wife of Dr. C. Campbell Williams, of a son.

MARRIAGES.

BLISS—COOPER.—On Jan. 8th, at the Parish Church, Henley-on-Thames, Captain J. M. P. Bliss, M.C., R.A.M.C., to Violet Mary, only daughter of the late John Manning-Cooper, Melrose-avenue, Orkneywood.
 MACKESSACK—RIBTON GORE.—On Jan. 9th, at the Church of St. James the Less, Plymouth, Captain R. C. Mackessack, R.A.M.C., to Ada Mary Frances, eldest daughter of Colonel and Mrs. Ribton Gore, Thornfields, Lisnagry, Co. Limerick.
 STOUT—PIKE.—On Jan. 8th, at Sutton, Surrey, Douglas Garnet Stout, Major, R.A.M.C., of Georgetown, Demerara, to Margerie Anne (Nancy) Pike, of Sutton.

DEATHS.

BERNARD.—On Jan. 7th, at New Silkworth, Sunderland, Gerald Bernard, M.D.
 BUTCHER.—On Jan. 10th, at Holyrood, Cleveland-road, Ealing, William Deane Butcher, M.R.C.S., aged 71.
 THORNTON.—On Jan. 8th, on the eve of his 85th birthday, Surgeon-General Sir James H. Thornton.

N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

HEALTH, MEDICINE, AND SANITATION IN INDIA.

1.
 THERE has recently been presented to Parliament a statement exhibiting the moral and material progress and condition of India during the year 1916-17. The following are amongst the references to health, medical, and sanitary matters contained in it:—

Medical Administration in War-time.

The year was marked by an unprecedented and almost unlimited growth in military medical administration. There is not space to record in detail the list of new hospitals, instituted or taken over by Government, the great expansion of many existing hospitals, the large number of fresh medical units established for service overseas or in India itself, the immense additions made to personnel and equipment, and the special preventive measures organised against infectious and epidemic diseases, flies, heat, glare, and other discomforts incidental to campaigning in the East. We can mention here only two matters of particular interest.

The first is a new departure in the foundation of orthopaedic institutes for the treatment of wounded and disabled soldiers. A large and very fully equipped institute of this kind is being established at Dehra Dun, and the King Edward Hospital at Cawnpore has also been taken over for conversion into a special orthopaedic hospital for Indian soldiers. Another such institute has been founded in Bombay.

The second matter is the increasingly difficult problem of providing trained medical officers. The civil side of the Indian Medical Service is not only the Government channel of medical administration and instruction for the whole of India, but it forms also the reserve of medical officers for the Indian Army on mobilisation. All Indian Medical Service officers liable to surrender from civil employ were returned to the Army in the very early stages of the war, and many others not technically liable were returned with or soon after them. Only the barest minimum of officers was retained to occupy the most important of the administrative and executive charges and to maintain at full working pressure the medical schools and colleges on which practically the whole supply of medical practitioners, official and non-official, in this country depends. Even so, the numerical strength of the service proved far below military demands, and has had to be supplemented by the grant of temporary commissions to numbers of civil assistant surgeons and private practitioners. Still greater difficulties beset the provision of subordinate medical officers for the Army. Exceptionally favourable terms have been offered to induce civil sub-assistant surgeons to enter military employ, but the number of candidates is still far short of requirements. On the other hand, there is a point beyond which the medical needs of the vast population of India cannot be sacrificed, and we have every reason to believe that the response already made to military demands has reduced the available medical personnel in most provinces to that point. Government has in this matter a responsibility to the civil population of India which it must discharge, and were a widespread increase of plague or other epidemic to find it unprepared and inadequately equipped the consequences would be disastrous.

Public Health and Medicine in Madras.

In the days before the war it was a common charge against the organisation of medical relief in India that the staff was quite insufficient to supply the needs of both the military and civil branches in the contingency of a great war. That there was some measure of reason for this apprehension can be seen from the fact that the Madras Presidency has had to surrender to the military department all its Indian Medical Service officers, except 16, in addition to 27 assistant surgeons and 76 sub-assistant surgeons. During the past year, in spite of shortage of staff, and notwithstanding financial difficulties, it was possible to increase both the number of institutions and the number of patients relieved, while at the same time there was a pronounced fall in the hospital death-rate. This state of affairs could not have been maintained had it not been for the efficiency of the remaining officers of the superior service, who have each been doing several men's duties, and of the assistant surgeons who have been called on to take charge of important hospitals.

During the year 1916-17 more than seven million patients were treated in the public hospitals and dispensaries maintained or aided by the State and by local bodies. There was a very large and satisfactory increase in the number of medical students, due partly to the opening of a new medical school at Ollent. The Pasteur Institute treated a record number of patients, and efforts are being made to collect reliable statistics as to the efficacy of the treatment.

In Madras City a careful malaria survey has been made and preventive measures have been taken on a fairly large scale against this disease. By means of itinerating dispensaries something is also being attempted in the Mufassal, but the huge area over which malaria prevails precludes any possibility of concentrations of effort such as have been successful in the cities of Europe and America. Great differences of opinion exist as to the efficacy of the measures taken in the Madras Presidency for the prevention of the spread of plague, but the fact remains that the larger part of the Presidency has enjoyed a comparative immunity from the disease, which may or may not be ascribed to the working of the plague passport and notification systems. As regards cholera there has for some time been a tendency for epidemics to be less serious and more local. It is hoped that the improvement of water-supply and the spread of education in hygiene will, in a very few years, reduce the mortality from cholera to much smaller dimensions.

Bombay.

The year was far from being as healthy as its predecessor, and the number of in-door and out-door patients treated in hospitals and dispensaries showed a further increase. Among in-door patients this occurred chiefly among cholera, small-pox, and malaria cases, while malaria was the chief disease amongst out-door patients. Eight sub-assistant surgeons were placed on special duty in the most malarious parts.

The second half of the year was marked by a rise in plague mortality, which reached its maximum in December. The Deccan districts, the Southern Mahratta country and Bombay City were most seriously affected, but deaths were reported from all except three districts. Special inoculators were sent to the badly-infected districts, and inoculations were performed on a larger scale than in 1915-16. As usual, these resulted in a much lower incidence of attacks of, and mortality from, the disease amongst inoculated persons, and confidence in inoculation is steadily increasing. Work and investigations in connexion with rat destruction were continued, and hydrocyanic acid gas was tried as a suitable poison for rats and fleas in houses and grain stores.

From cholera the heavy mortality of almost 20,000 deaths was recorded. Most Khandesh and other districts, to which the disease spread from it, were the chief sufferers. In sanitary matters arrangements have been made for the examination of drinking-water, the supplies of various important towns have been improved, and a committee investigated the problem of the sanitation of pilgrim centres, which are a fruitful source of epidemic diseases. Small-pox cases were more numerous than in the previous year, but less than the decennial average. Vaccination is voluntary except in the large towns, and is being popularised by the use of glycerinated calf vaccine. District sanitary associations have been formed and have done useful work, while a sanitary demonstration held at Belgaum was largely attended.

A new civil hospital was opened and another completed during the year. Six taluka dispensaries were also opened and many additions and improvements made at civil hospitals. To spread a knowledge of the danger of tuberculosis instruction to school teachers and children was given and lectures and demonstrations were held. Owing to the war the medical services have been depleted to the utmost extent, and the loss of staff and curtailment of expenditure make present progress difficult. No fewer than 43 officers in the medical service out of the sanctioned staff of 58, the entire staff of military assistant surgeons employed on civil duties, almost one-third of the civil assistant surgeons, a large number of civil sub-assistant surgeons, and many of the nurses and the trained servants of civil hospitals were surrendered to meet military requirements. In spite of this depletion a large military hospital in Bombay was worked by a civil medical staff, and various civil hospitals have undertaken the treatment of military cases.

(To be concluded.)

THE BISMUTH ORDER.

THE Minister of Munitions has modified the Bismuth Order made by him and dated March 12th, 1918. On and after the 10th day of January, 1919, Clause 2 is to be omitted and a fresh Clause 2 (b) substituted. This sets out that no return is required from any person whose total stock in hand is not intended to be used in connexion with the manufacture of metallic alloys and who has not, during the period for which a return was necessary, exceeded a supply of 56 lb. of bismuth metal or any alloy thereof.

*LEMON JUICE OR LIME JUICE?

To the Editor of THE LANCET.

SIR,—Mrs. Alice Henderson Smith, in her most interesting paper (THE LANCET, Nov. 30th, 1918), for which we must all be grateful, says that "about 17 years later" than the return of Sir John Ross, therefore about 1860, the Admiralty began to use true lime juice, which is not antiscorbutic.

Could she certainly say if it was lime or lemon juice used in the Crimean War and in the Baltic (1854)? I write far from books of reference, but I remember that in the Baltic a French ship suffered severely from scurvy, met an English frigate (*Meander*), and got from her "lime juice," which speedily cured the scurvy. This was, I now suppose, probably lemon juice; could Mrs. A. H. Smith perhaps tell us?

For the papers of Miss H. Chick and others on vitamins we must all be greatly obliged to them.

I am, Sir, yours faithfully,

W. E. HOME,
Fleet Surgeon.

Dec. 13th, 1918.

NEW RECORDS CONCERNING IMHOTEP (ASCLEPIOS).

SOME 13 years ago considerable interest in connexion with the history of ancient medicine was aroused in the career of Imhotep, the celebrated physician of a very early age in Egypt, whom the Greeks subsequently associated to Asclepius. This sage's story was elaborated with considerable skill from the fragmentary evidence of papyri and inscriptions by Professor Sethe and others, and ably utilised by Dr. Richard Caton for the Harveian Oration of 1904. Some years later an important Greek papyrus concerning Asclepius-Imhotep was published by the Egypt Exploration Fund, and summarised in our pages.¹ Since then, excepting a few references in Egyptological journals, the matter has not received any further elucidation.

In last year's "Bulletin de l'École Française d'Archéologie Orientale" of Cairo, M. Henri Gauthier has edited "Un Nouveau Monument du Dieu Imhotep." This is an inscribed base, or plinth, for a statue of a personage named Pedubastit (which also gives the name of his wife and three daughters). He was a prophet, or priestly scribe, of Imhotep, who is therefore in the record recognised as a deity and he is styled son of Ptah in the texts. Pedubastit's religious duties, among other matters, consisted in seeing that the various ancient fêtes or holy days of Imhotep were properly

observed, and in the panegyric of his career he sets forth these days fully in a list giving six dates, but not in the correct chronological order. In another text upon the same stone, however, Pedubastit, or his survivors for him, more completely describe the events in Imhotep's life which caused each day selected to have been reserved for a festive in his honour.

This information is new and of great interest. The first occasion for commemoration was Imhotep's birthday 16th of the month Epiphi. His mother is stated to have been a lady named Khardit Ankh. The second fête was the anniversary of Imhotep's presentation to his divine father Ptah and to Sekmet, a goddess, parda of Ptah. The third day was kept in honour of "the time when Sekmet destroyed the vile Asiatics in a naval battle upon the re lake." The fourth day, 17th of month Mesore, was, according to M. Gauthier's reading of the new-found records, that of Imhotep's death, and the 23rd of the same month that of his burial.

Other Egyptologists who have read the inscription dispute this rendering, thinking the fourth fête was that of the onset of the physician's fatal illness and the fifth that of his decease. Only a few remarks are possible here. Firstly, as contrary to M. Gauthier. During his career as a physician Imhotep must have become famed for his medical skill, and consequently revered. But it was probably not until long after his earthly career had ended that he was canonised and finally alleged to have been of semi-divine origin and so a deity. This was a common assertion as to procreation of the deified Pharaoh. It is obvious that the fête day of Sekmet's victory was foisted into the catalogue of the medical hero's memorials. However, Imhotep at some remote date was deified. Now an interval of but six days between death and burial was insufficient to perform the funerary rites and proper mummification of even the poorest personages, but it is just possible that Imhotep died in a year when the Egyptians inserted an additional month to rectify their calendar—if so it would give 35 days. On the other hand, verily a festival in honour of the illness of a god of healing would have been curiously contradictory. Moreover, there is great weight in an argument used by M. Gauthier—i.e., that never does an Egyptian text refer to the illness of a deity, neither does the writer ever recollect even a reference to individual illness except in medical papyri or in some book of a Job-like type in which the author laments senile decay. The thousands of obituary notices merely state a person was born in a certain year, died in a subsequent one, and sometimes enumerate the length of his life. However, the monument tells us that on the fourth day of the month Paoni Imhotep's spirit departed for Paradise. It adds that he was interred in the great Dehan which is believed to have been a vast cave, or excavation, in the desert near Memphis. In later time its surrounding land had become an immense Campo Santo. It probably bore some title indicative of being sacred to Imhotep, which word the Greeks rendered as "Asclepeion."

Also we have many inscriptions omitting all reference to his godship, while Imhotep's titles, too, are human enough, so also are his parents and wife. It is evident that, in time, there were two traditions of him. One, the oldest, makes him a marvellous physician, and great in other sciences and friend of royalty. The second speaks of him as a deity. The new papyrus of Imhotep Asclepius referred to throws no light upon the subject. It is a literary effusion of a Greek author who, after Imhotep had been identified with Asclepius in order to exalt him, alleged that Menkaura, the builder of the Great Pyramid, had granted certain bounties to Asclepius, son of Hephaestus, and to two other people named Horus and Caleobis, who, he says, were sons of Hermes and Apollo. Horus was not, however, son of Hermes-Thot, but Apollo himself, whilst Caleobis is unknown. Imhotep was not an uncommon name in Egypt and Horus was still more frequent. There may have been sepulchral texts near the pyramid of people with these names, or the statement may be pure invention. The other new-found record discussed here is of value as confirming the fact by an inscription of one of his temple hierophants that Imhotep was deified and had numerous worshippers.

THE USE OF CREOSOTE IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—The use of creosote during the recent epidemic appears to have been fairly general, but what has impressed one more particularly has been the manner in which it has been possible to abort pneumonia. I had been sceptical of this until several cases occurred, and I am personally convinced that this has been due to the creosote and potassium iodide. I doubt if this has received sufficient attention, the early exhibition of this drug is of such capital importance: in some cases one has found that the patient has been unable to accept creosote in mixture, then resort has been made to capsules or some preparation of guaiacol in cachet.

I am, Sir, yours faithfully,

Jan. 11th, 1919.

I.M.S.

¹ THE LANCET, 1904, i., 1769.

² THE LANCET, 1915, ii., 1204.

A Personal Retrospect of GENERAL PRACTICE.

By JAMES PEARSE, M.D. EDIN.

SOME LIMITATIONS OF GENERAL PRACTICE.

It is a frequent statement that the accumulated experience of the general practitioner finds inadequate expression, and adds too little to the store of scientific knowledge of disease. Too much may readily be demanded from this source. The nature of the general practitioner's work leaves him as a rule little opportunity for the reasoned and detailed consideration of the items of his experience, and he perforce has in general to be content with the immediate alleviation of disease and to leave considerably to others the direct advancement of science.

Allowance, however, being given to this consideration, a personal retrospect cannot but leave a sense of disappointment that, though there may have been some gain of one's individual knowledge, there has been complete failure to add even an iota to the store of general knowledge. "Produce," says Carlyle, "produce: were it but the infinitesimal fraction of a product, produce." Alas for the failure to respond to that call from Sartor, the Bible of early days of struggle! But why the failure, and wherein is it of general application? Partly temperamental; and it would be unreasonable to expect advanced scientific work from every general practitioner. It is not every mind that has the scientific bias; not every medical student is a budding Pasteur. The faculty of practical application of knowledge, which is the essential rôle of the practitioner, is often divorced from the faculty of coördination of experience and inductive reasoning therefrom. Partly educational; and looking back upon one's training one realises that there was too little evocation of individual powers of reasoning, presentation of items of acquired knowledge with insufficient stress on the unexplained factors the elucidation of which is necessary for a fuller understanding of the problems of disease. In short, the student is apt to blossom forth into the practitioner, feeling that his knowledge is gained and that his function henceforth is only to utilise it. The bias thus given to the mind has been retained, and the *mens media* has grown as a crystal grows, by accretion, and not as an organism by absorption, metabolism, and development. Herein is the essential need, the need of vital reaction. The danger is that we all tend to be creatures of habit, slaves of routine, to work as a machine in an accustomed groove, to do to-day what we have done yesterday, to wear blinkers whereby our vision is limited. It is difficult to resist this tendency, and only the favoured few can fully do so and retain a mind impressionable, alert, imaginative, vital. Hence the failure to see in any presentation of disease more than has been seen before or the textbooks have revealed; hence an unwillingness to test authority by experience; hence the submergence of the individual mind, and the bondage of tradition. This tendency is to a certain extent inevitable. It is a counsel of perfection to expect the busy practitioner after long days and disturbed nights to keep his mind ever alert; moreover, the individual patient asks to be relieved and not to be studied. Neither is the tendency altogether to be deplored; the human material dealt with is too precious, the interests at stake too vital, to allow with safety the unbalanced play of minds "complexionally propense to innovation." The middle course is to be desired. And such consummation is the more likely to be attained if the young graduate should leave the portals of his school, not only with a mind stored with ascertained facts, but should carry with him and retain some vision of the unexplored domain, an awakened sense of the responsibility and power of individual thought, heightened by a knowledge of the work of those who have broken ground before them untitled.

UNCHARTED SEAS.

Medicine, it has been said, is an inexact science. Its practice is sometimes an object of scornful criticism by those who have no inner knowledge of its difficulties and may be accustomed to deal with subjects more demonstrable and less elusive. Again, many of the public appear

to regard the practitioner of medicine as one whose brain is compactly pigeon-holed into compartments, each labelled with the name of a disease and carefully docketed with the appropriate remedy. Alas, the matter is not so simple that there is never room for hesitancy; but one soon finds that to express hesitation is to be lost, and to be in doubt is interpreted as weakness. And the young practitioner himself is apt to start out with a perhaps undue consciousness of the fullness of his knowledge and of the resources of his scientific equipment, soon, however, to find himself in uncharted seas.

Two considerations lend themselves to this misconception. In the first place, disease as seen in practice is often not according to schedule. Disease as portrayed in the textbooks is an entity, a finished picture, a completed building, an orderly procession; illness, as frequently seen in the consulting-room, is not a definite entity, is ill-defined, incomplete, refuses to be labelled, presents a disarray of vague symptoms. It is with this sphere of vague illness, of initial stages, of the symptomatic manifestation of ill-defined disease, of functional disorder, that the work of the general practitioner is largely concerned. Such illness does not lend itself readily to clinical teaching, or exact portraiture; its origin and course are frequently obscure and its treatment outside the range of ordinary routine. Thus it has not come readily within the scope of early systematic training, and the practitioner must gain his knowledge from his own experience and the exercise of his own judgment, strengthened, if possible, by contact with his seniors in assistance or partnership. The second consideration, which is associated with the first, and which goes far to explain the inexactitude of medicine, is that the practitioner early discovers that he is not so much called upon to treat disease as to treat persons who are ill; in other words, that he has to deal not with a mechanism, but with a delicate organism inhabited by an individual. It is not only the gross effects of disease which have to be countered, but the reaction of an individual to such disease. There is always the personal equation. It would almost seem as if there were a physiological or a pathological character. The author of *Hydriotaphia* finds individual divergence even in decay when he states, "bodies in the same ground do not uniformly dissolve, nor bones equally moulder." Even in the more definitely objective types of disease no two cases are exactly similar; no two cases of enteric are identical in course and manifestation, one case of pneumonia differs from another, carcinoma may develop aberrant processes. But the personal equation is much more than this. There is the individual characteristic; his general attitude to life, the courage with which he meets the strokes of fate, his kicking against the pricks, his equanimity or irritability, his self-concentration or self-forgetfulness. And other factors enter in: the wisdom or unwisdom of relatives, business anxieties, family anxieties, all the social factors which are involved when illness lays a heavy hand on a household, or extinction threatens a life on which affection is centred. Here, then, is an uncharted sea in that the family practitioner has to face more than the mere problem of disease. Said Bacon:

"Physicians are some of them so pleasing, and conformable to the humour of the patient, as they press not the true Cure of the Disease: and some other are so regular in proceeding according to Art, for the Disease, as they respect not sufficiently the Condition of the Patient. Take one of a Middle Temper."

There is an art as well as a science of medicine. The practitioner is incomplete who has the art without the science, or the science without the art; but incomplete also if the science and the art are limited to medicine alone, for the field is wider far. Hence the necessity for a width of outlook in medical education, for a knowledge of the humanities, for a social interest: herein the factor which precludes the supersession of the general practitioner by the specialist: herein the necessity of visualising the human factor in disease.

SOME DIFFICULTIES OF GENERAL PRACTICE.

For those men who do not succeed to established practices there is a varying period of waiting for patients, followed by a period of moderate success, and then, if fortune and merit favour, a period of unremitting activity. Sir Andrew Clark is said to have stated that he strove 10 years for bread, 10 years for bread and butter, 20 years for cake and ale. The early years are not pleasant to live through, but

they bring a pleasure in the retrospect of difficulties surmounted. They have their special dangers—financial anxiety, the ennui of idleness, the temptation to use specious methods of advancement; they have their advantage in a continued opportunity for study, and in the fact that work when it does come may be done without rush in thoroughness, and thus a good foundation laid.

But the difficulties of the general practitioner arise more especially in the busy years, when there may be not too few but too many patients to be seen, when the day may bring no interval for leisure and the night be often robbed of rest. There are men, who are to be envied, who can compass a large amount of work without evidence of haste and who, however busy they may be, leave a patient with the impression that he only is the chief concern. But others of us in busy times are conscious of a constant sense of strain, of thinking in one house of the next, of a feverish anxiety as to how the round of the day is to be completed. It is in this atmosphere of haste that some of the main difficulties of general practice are to be found. It has often been said that mistakes are made not from lack of knowledge but from lack of examination. Full examination is neglected not so much from carelessness as from absence of sufficient time for thorough review. Thus the work is left to the next visit or consultation, or to the one after that, and may be still postponed, until complications may develop or the patient go elsewhere, to the detriment of reputation.

There arises from this another danger, that of the mere symptomatic treatment of disease. It is a commonplace statement that such symptomatic treatment is sometimes all that can be compassed, as the ultimate cause may be obscure and undeveloped. Also the patient demands relief from urgent symptoms, and relief can often be given. But the tendency grows all too readily to be content with the alleviation of the obvious, to fail to probe to ultimate causes, to forget the guiding rule *causa sublata, tollitur effectus*. Hence the relief of pain by analgesics, of insomnia by hypnotics, of debility by tonics, of dyspepsia by drugs alone, while the essential cause remains untouched. An associated tendency is that of routine. It is so much easier to do what one is accustomed to do than to follow on and develop new ideas. And this is an inevitable result of an experience which sees so many new ideas and suggestions fail to stand the test of time and yield their place again to old-established method. In the youth of practice one tries with enthusiasm every new proposition: in later years one waits to see if the new is to be permanent. But though there is reason for such attitude it is difficult to escape an undue conservatism, a blind adherence to established routine, and to avoid "the great tendency of the human mind to fall into a groove and pursue its work on lines that give no occasion for mental strain."

A further danger is that which, for want of a better term, may be designated "staleness." Its occurrence calls to mind the teaching regarding summation of stimuli, that under the frequently recurring influence of electrical stimulation a muscle gradually reduces its response and finally fails to react further. It produces the failure of the most obvious diagnosis, and the feeling under which every difficulty is magnified, and "the grasshopper becomes a burden." It is not that knowledge is lacking, but that the tired mind fails to absorb the transmitted impression. Probably most practitioners in times of stress have realised this; well for them if, recognising the danger-signal, they can find relief in a well-earned rest.

A further danger associated with the fullness of the practitioner's life is that which may always follow excessive concentration on one subject—namely, a failure of interest in other spheres of life. It is illustrated by the fact that few general practitioners retire from practice: the majority die in harness. The reason, to a large extent, is that not many are able to lay aside the means to provide for later years; but a further reason is that work has been so absorbing that there has been too little opportunity for the cultivation of hobbies or outside interests, and thus without the interest of work life would be lacking in zest.

These seem to be the especial dangers of which a personal experience of general practice has brought cognisance. They are not all peculiar to the calling of the practitioner, but there are special features of his life which give them

prominence. Herbert Spencer, in a criticism that education deals inadequately with the conduct of life, says that the question "Is it worth while?" is not asked with sufficient frequency, and emphasises that work exists for life rather than, what is the more currently expressed view, that life exists for work. To this question the practitioner of medicine cannot reply only from his own point of view: others may, perhaps, be in a better position to answer for him. But it may be well sometimes to ask the question and consider whether too heavy a price is not being paid, especially if the price may possibly involve the risk of deterioration in value.

SOME REQUIREMENTS OF THE GENERAL PRACTITIONER.

Every practitioner who has carried on practice for any considerable time must recognise that he is faced with special difficulties unknown to his predecessors. For them the years brought but slow advance in knowledge, and they were perforce in the main dependent upon their own developing experience. All this is altered; changes have been so revolutionary that no man, even of the widest experience, can feel that this alone is a sufficient equipment. Who amongst us who graduated even 20 years ago can pretend to an accurate knowledge of late developments? It is sufficient to state a few of these—the intricacies of cardiac diagnosis; the theories of immunity and vaccine therapy; the action of the internal secretions; the extended use of X rays; the diagnosis and treatment of syphilis; the various blood changes. It is impossible for the general practitioner with little leisure to be thoroughly conversant with all new work. Yet that he should have a working knowledge of it is essential. Many men, to their credit, strain every nerve to extend their knowledge and adaptability and to maintain themselves abreast of the times. Others give up the effort and two tragedies may occur: the tragedy of lives hazarded by imperfect diagnosis or treatment, the tragedy of practices lost to younger men with fresher knowledge.

It will thus be seen how essential it is that medical practice should be combined with continued study. The desirability of this will be generally admitted but its attainment is not easy. When once a man has developed a busy practice the demands on his time are so continuous, periods of leisure are so scanty, that opportunity for study is but limited. However laudable intentions may be, attainment of necessity lags behind.

There are three directions in which it would appear that this requirement might to a certain extent be met.

1. Post-graduate Study.

Facilities for such exist, but only a limited number of practitioners are able to avail themselves of these. Holidays from general practice are rare and refreshing, and no small degree of enthusiasm is needed to forgo such for the sake of study. And to leave a practice for any lengthened period is both costly and hazardous.

Some modifications of the present system seem worthy of consideration. The number of centres where post-graduate training has been developed is limited. The development of such work at other centres would be an advantage, especially if the work were so arranged as to be available to practitioners in the adjacent area without undue absence from practice. Many practitioners who would find it impossible to attend a prolonged session would make an effort to attend a short course—for example, a series of lectures on six or eight afternoons or evenings once a week; and in a specially adapted course much might be learnt in that limited time.

A further modification might be advisable as applicable for more rural areas where even the limited attendance above indicated would involve too long absence from home. There might be developed extension lectures in medicine, and a lecturer attend occasionally at a given centre in the country for the enlightenment and encouragement of the rural practitioner. True, such lectures could not be attended by a large number, and would not be directly remunerative to the lecturer, but their value might be very great.

Further, the hospitals might render very material assistance to the general practitioner by developing courses of clinical lectures at times adapted to his convenience. And especially would this be the case if use were made of hospitals not only in the recognised teaching centres, but also of those situated elsewhere.

Developments such as these would have far more than their direct teaching value. Medical men, who too seldom

¹ Mackenzie: "Interpretation of Symptoms."

meet in fellowship, would be brought together in the pursuit of knowledge. They would form contact with a larger sphere than that in which their daily work is often cast; their horizon would be extended and they would return to their work with a heightened interest and zest. With all its variety, even medical work is apt to become monotonous; there are times when the interest of the most zealous will pall, and his mind become stale: whatever will counteract such tendency is of value not only to the practitioner, but also to the community.

2. Specialist Facilities.

No practitioner can now have at his immediate disposal the whole equipment necessary for the adequate diagnosis and treatment of disease in accordance with modern requirements. Neither can any practitioner have the requisite knowledge to use such equipment in every variety. Where resources other than his own are required he must send the patient elsewhere, and often to a considerable distance. The advantage or disadvantage to the patient is not now under consideration, but the result to the practitioner is that with much more frequency than was formerly the case he must lose touch with his patient, even in the matter of diagnosis. The danger is lest he become a mere sieve for the sifting out of cases, and that those requiring refinement of diagnosis or technique pass beyond his ken. With such an issue his mental power must inevitably decline and his usefulness to the community diminish. Thus an extension of specialist facilities, so that there might be more ready access for the average general practitioner, would be a great boon. Especially is this true as regards the practitioner in the country or the small country town. The city practitioner has facilities at hand, and may have access to them when he will and if he will. His more isolated colleague is by his isolation handicapped; he may send a patient to be X rayed and have to be content with a photograph, which perhaps he does not understand; he may receive a detailed diagnosis of an obscure heart case, but know nothing of the technique involved; he may send a scraping of a chancre to a pathologist, but the spirochæte may be only a name. *Experto crede.*

The continuous development of the general practitioner, which is so essential, is impossible without an extension of facilities. But here, again, the middle course is the safest. To spoonfeed the practitioner, to encourage him to depend too exclusively on the resources of others, would be disaster. Isolation or semi-isolation is not without its advantages; it develops a resourcefulness and self-reliance which in many an instance are of more avail than the most up-to-date knowledge. Many a country doctor will perform, as part of his recognised routine, surgical operations which a London West End practitioner, in receipt probably of a much larger income, would consider as beyond his province.

3. Medical Literature.

Post-graduate studies have their place, specialist facilities have their place, but the main resource of all practitioners must be in medical literature. Research herein is again beset with difficulty. In the early years of practice there may be abundant, even too abundant, time for reading, but this suffers from not being brought to the bar of sufficient experience; in later years stress of work and scanty leisure allow little opportunity for study. Hence a tendency to depend upon the knowledge gained from accumulated individual experience without refreshment from other minds. Moreover, as years increase, there tends to be a less open mind, less adaptability to new impressions. Bacon has said:

"For it is true that late learners cannot so well take the plea: Except it be in some Minda that have not suffered themselves to fixe, but have kept themselves open and prepared to receive continual Amendment, which is exceeding Rare."

This lessened pliability of mind reinforces the difficulty induced by diminished opportunity for study, and the tendency grows to be content with an occasional dip into a medical journal, and to leave aside deliberate and purposeful study.

It is not, however, from this point of view that the subject is mainly considered. These are the difficulties of the practitioner in approaching medical literature, but they are too often enhanced by the methods of presentation of such literature. The assistance which the practitioner seeks from books is mainly in two directions—clinical instruction which will help him in his daily round, and instruction in new developments. As regards the former there has

been much improvement in recent years. Time was when there were only ponderous tomes, weighted with unrequired details, which had to be laboriously sifted in order to obtain the essential knowledge. The practitioner does not require the elaborate text-book, but the graphic presentation of the essentials of diagnosis, prognosis, and treatment—the clinical portrait. It is on the clinical lecture of his student days, impressed by the personality of his teacher, that his knowledge of practical medicine is really based, and it is the continuance of such vivid type of teaching that he still desires. That such literature is more in evidence is of good omen, but there is still a tendency to dwell unduly on the rare.

More difficulty is experienced in following writers in the later fields of research. Perhaps it is because much of the new work is done in the laboratory, but certain it is that the language in which it is expressed is often far from easy of comprehension. It must be difficult for those working in these fields, to whom new ideas and new terminology are current knowledge, to realise that many practitioners have yet the alphabet to learn of their science, and that what is to themselves a simple statement may be to others a maze of intricacy. But it would be well if writers were more adequately to visualise their audience, and study their expression and terminology, not from the point of view of those who write, but of those whom the writers address. No grown man expects to be fed on pap food, and it is always well to have some mental pabulum on which to bite hard; otherwise the thinking faculties may atrophy. But the more difficult a subject the more necessary that its exposition should be divorced from needless obscurity.

VIS MEDICATRIX NATURÆ.

One lesson, of principle rather than of detail, emerges from experience of general practice—namely, a recognition of what is involved in the *vis medicatrix naturæ*. As young practitioners we are apt to commence with a consciousness of knowledge, with a sense of our primary importance as agents; experience brings the recognition of a secondary place in waiting on and assisting the efforts of Nature. "Knowledge is proud because he knows so much, Wisdom is humble that he knows no more."

The objective manifestations of disease are often to be regarded, not necessarily as morbid processes, but as the efforts of Nature to be rid of a foreign element, to limit its activities, or to minimise its ill-effects. Pain is a warning; the rigidity of muscles is a protective effort; the effusion of serum is a separation of inflamed surfaces; the formation of pus is directed to the removal of a noxious agent; the swelling of glands is evidence of a defensive organisation; elevation of temperature is not necessarily an evil. Nature is always on the alert and resents disease in man. The recognition of that fact leads one to watch her efforts and to take a second place. It awakens the consciousness of an agency other than one's own, brings a realisation of power and law in coöperation with which lies one's sphere. It brings reliance on the common-place, on rest, on dieting, on fresh air, on sleep, on exercise, on the simple life. It emphasises the removal of hindrances to health as preferable to active interference when health has become unbalanced. Recognised by the medical attendant, the carrying out of this principle is often obstructed by patients or the friends of patients who exemplify the spirit of Naaman, who, wroth at the simple instruction to go and wash in the Jordan, demanded drama and that the Prophet should surely come to him and call on the name of the Lord and strike his hand over the place. Herein is an advantage that surgery has over medicine, that its action is so much more frequently immediate, direct, and impressive. And it is recognised, of course, that there are conditions, especially surgical emergencies, which constitute a violent disruption of Nature and call for prompt and primary interference.

All this does not mean that the policy of the practitioner is to be one of drift or wholly of masterly inactivity. That the healing of a fractured limb is Nature's work does not preclude the necessity of careful setting; that pneumonia runs a recognised course does not preclude the duty of relieving a struggling heart, or aerating the lungs, or watching for complications; that labour is a natural process does not preclude a timely assistance or direct intervention when Nature is obstructed. In no way are the

duties of the practitioner lessened; but his attitude and activities are modified when his position as Nature's servant is recognised. Indeed, rightly considered, this tenet conduces not to a policy of *laissez-faire* but of increased resourcefulness. The recognition that disease is not inherent stimulates to search the cause of any deviation from the normal: should a case of illness not run the recognised course it postulates the presence of an unexplained factor and probes for such; it produces dissatisfaction with issue other than recovery.

And this creed brings with it another tenet—that of a reasoned optimism. Realising that Nature has many assets which postpone bankruptcy, one learns in certain cases to hope almost against hope. So many patients have been seen who recover from desperate straits that experience justifies a caution in expressing pessimism. This optimism must not be unreasoned: there are indications which cannot be gainsaid, there are conditions in which experience tells that the final ending is inevitable, but short of such the attitude of hopefulness and patience is often justified. In both the aspects considered—of waiting on the powers of Nature and of hopefulness—it is refreshing to bear in mind some words of Ambroise Paré. If any man, judged by our knowledge, had grounds for pessimism, surely he. But through his own records there run like a refrain the words, testifying the humility of greatness, "I dressed his wounds and God healed him"; and in reference to one case he states: "I told him that there was still some hope because he was young, and God and Nature sometimes do things which seem to physicians and surgeons impossible."

And there is a wider optimism which argues that if disease is resented in the individual so is it resented in the community, that its general incidence is not inevitable, and that the reaction of the larger organism is directed to its removal. The past 50 years have witnessed a revolution in the attitude to disease, wrought more especially by the work of Pasteur and Lister. They countered the doctrine, and the hopelessness engendered of the doctrine, of an inherent tendency to disease, of a *contagium sui generis*, manifested by such views as that there was a "morbidity spontaneity of the organism," that typhoid fever "is engendered by ourselves within ourselves," that there was "a spontaneous tuberculous degeneration of the organism," that the pyæmic infection was "tenacious and ineradicable," and that its source was to be found in "hospitalism." Pasteur wrote to Bastian:

"Do you know why I desire so much to fight and conquer you? It is because you are one of the principal adepts of a medical doctrine which I believe to be fatal to progress in the art of healing—the doctrine of the spontaneity of all disease."

This fatal doctrine has now gone, and a hopefulness has succeeded hopelessness. The counter doctrine is extending to fields wider than those of the infections, and the nature of causative factors is more generally recognised. But disease has been ever present, and familiarity therewith has bred the view of its inevitable occurrence. Inevitable it will be for a yet indefinite time. But the general practitioner who moves amongst various sections of the community, practising amongst the wealthy and the poor, amongst those well-fed and those under-nourished, amongst the well-housed and the ill-housed, amongst the over-worked and those capable of leisure, be they rich or poor, knows that the incidence of sickness and of types of disease varies according to the surroundings and circumstances of his *clientèle*. And experience justifies a reasoned optimism that with wider knowledge, a saner life, and a healthier environment the community will ultimately escape from many ills which now seem inevitable.

ON PROFESSIONAL RELATIONS.

The peace and happiness of a medical man's life is largely influenced by his attitude to his fellow practitioners or their attitude to him. The writer's lot was cast, so far as professional relationships were concerned, amidst pleasant circumstances. He remembers no single incident of rancour or misunderstanding, and for this he thanks the example of older practitioners. There is no doubt that such an experience is not universal, and that professional relationship often leaves much to be desired. Osler, in one of his addresses, says "No sin will so easily beset you as uncharitableness towards your brother practitioner." Why should this be so?

The work of a general practitioner differs from most other callings in the personal relationship it establishes with patients; it is not a mere exchange of goods, a business

transaction, not a mere giving of advice or a transient calling at a house, but a contact between individuals, an intimate reaction. Hence the severance of relation between doctor and patient cuts deeper than a similar severance in other spheres, and it is only reasonable to anticipate that it should create some heartburning. But it is unwise that it should be allowed to create bitterness. Just because the work so nearly touches human nature, and because human nature is so varied, is there the more scope for divergence. And it is unwise that secession should create animosity to the succeeding practitioner, but this is frequently the result. He is not of necessity a supplanter, and has not necessarily taken his place by devious and unprofessional ways. It is easy to blame the patient for whims and ingratitude, to blame the colleague for insidious advertisement, but a wiser rule is to consider in such case whether there has not been some error in one's own conduct or knowledge, and if this cannot be established to endeavour to cultivate a philosophic calm. After all, a patient has as much right to change his doctor as to change his grocer, and it would be well if this were more generally recognised. There are some words of Sir Benjamin Brodie in this respect which are worth remembering:—

"Taking all things into consideration it appears to me to be a question whether there is not, on the whole, more cause for wonder in the patience of the many than in the impatience of the few, and whether the gratitude of those who over-estimate our services does not even more than compensate for the neglect of those who withhold from us the credit which we really deserve."

Much depends upon the primary attitude to medical practice and its financial issue. Much sentiment has been uttered and written on the nobility and self-sacrifice of a doctor's work, sentiment which, to the credit of the profession, has often been justified. But a doctor has his obligations to meet as other men; he cannot educate his children on a reputation for philanthropy, nor live in old age on the memory of good deeds; he would not be human if he did not derive gratification from financial success. In any case, for the general practitioner such success is seldom proportionate to the strain involved, and it frequently arrives late, after years of penury and struggle. But there is all the difference in the world between a legitimate satisfaction in well-earned reward and a primary regard for the shekels. As an ultimate issue it is the difference between the love of work and the love of money; between the attitude which regards a patient as a person who is ill and the attitude which regards him as an individual who pays fees; between medicine viewed as a profession and medicine viewed as a commercial career. And if the fee aspect is unduly predominant there is an added likelihood of bitterness in the event of a patient severing relations. Competition is defined as "common strife for the same object"; if the object is the fee return it is obvious that what one gains another loses; if the object is the cure of the patient it really does not matter if the patient is cured by someone else so long as he is cured. Such detachment is not easy to attain, is probably only attainable by the few, but the pursuit of its attainment is a wise ideal. And after all, if patients never left us much needed stimulus would be lacking; a shock to equanimity and self-satisfaction is not without its value.

There is no work so individualistic as that of the general practitioner. Day by day he has to exercise his own judgment in vital matters; he is an autocrat whose word is law; he moves as it were in his own preserve, seldom challenged, responsible in his private practice to his patient and to himself alone. This individual and personal responsibility is one of the attractions of the practice of medicine. But it brings with it a tendency to come too little in contact with fellow-practitioners or to know them only as others engaged in their own special preserve. Anything which breaks down this tendency and brings medical men together, not as competitors but as participators in other spheres of life, is a great advantage; it brings the knowledge that the other man is not so bad a fellow after all, that he has human as well as professional interests and other objects in life than the purloining of patients.

SOME COMPENSATIONS.

I call to mind a Scottish country practitioner, who used to try to dissuade from the life of a general practitioner with the warning, "You are jist a body's body." "A body's body," indeed, he was over a wide stretch of countryside. Years afterwards, meeting in a railway carriage far

from the neighbourhood a fellow traveller from the same district, to the question, "Do you know Dr. —?" there came the reply, "Ken Dr. —? Why, he broocht me intil the world, and he's the finest pur mon's doctor that ever breathed." I see him now, aged, retired, with shattered health, and indifferent means, an ending to his days far other than he has merited, but withal content, and, I think, not regretful that he has been "a body's body." Another comes to memory who worked from youth to advanced years with almost unremitting toil, a man against whom no breath of evil whisper ever stirred, of whom I have heard it said, "If I had committed a murder I would go and tell Dr. —." Such an attitude is the result of the human relationship, the penetration to the depths of human life, the intercourse with its sanctities and woes, which is inherent in the work of the practitioner and which is the compensation for the difficulties of his life. The life-work of most other callings is less intimate, controlled more by the "tyranny of mere things." I recollect an incident related by a colleague of his entry to a sick room, and of how the patient, putting down a book which he had in his hand, and which happened to be the Bible, made the comment, "It's only the doctor." The observation on the incident was that clergymen see men at their best, lawyers see men at their worst, while doctors see men as they are. It is this touch of nature, this human intimacy, which leads many patients to regard their doctor, not as professional adviser only, but as guide, philosopher, and friend, and to seek his advice on matters outside his immediate sphere.

The general practitioner has, indeed, abundant opportunity for the observation of human nature. He presides at birth and is sought in death, he knows of the skeleton which is hidden in most cupboards, he knows the tragedies which blast a life, and the minor discords which embitter it, he sees human virtue and human frailty, joy and sorrow, life in its seaminess and life in its excellence. Well for him if he can preserve a genial toleration for the frailties of mankind and the spirit of charity. The contrary might be expected: as it is put by the Shepherd in *Noctes Ambrosianæ*:

"Physicians, ane might think, seein' folk deeing nicht and day in a' manner o' agonies, and bein' accustomed to pocket fees by the death-bed-side, would become in the core o' their hearts, as callous as cussocks."

As a matter of fact, though doctors spend most of their time battling with the ills of life, there are surely few in whom this engenders any spirit of resentment against Fate: and this from no lack of sympathy. In the first place they view these ills not from the point of view of philosophic abstraction but as men who are engaged in the concrete work of overcoming them, and who derive satisfaction therefrom. A further reason is that if they see much of the ills of life they see also much of the good, if they see many shadows they see also much radiance. They witness the pangs of labour, but also the joy that a man-child is born into the world; they company death, but know that he seldom comes as the King of Terrors, but often as "the poor man's kindest friend"; they see a child stricken low, but also the heroism of the nursing mother; they see uncharity and selfishness and vice, but also charity and self-forgetfulness and virtue. Doctors could reveal better than most men the degradation and sorrow of which human nature is capable, but also its elevation and joy. It is well to be impressed by the latter while not forgetting the former. If practitioners might enrich medical literature by a more frequent detailing of their clinical experiences they might also rebuke pessimism by a record of their human experience. One incident among many comes to mind. I recollect a visit to the cottage of a rural labourer. I see now, strapped to a chair in the garden, a repulsive form with enormous head and stunted limbs, speechless, helpless as a new-born babe, a youth of 14 years, idiot from birth: I hear now the mother's anxious query, "Have you come to take him away?" and her quick addition, with hand uplifted in emphasis, "Sir, I would not part with that child, though you gave me all between earth and sky."

But apart from this general human touch it is questionable if there is any sphere of work which can bring the same sense of direct pleasure in its fruition. The French have a saying, "Une cure c'est une paternité." And to tend a patient through a severe illness, to see him smitten down in the midst of robust health, to watch the descent into the valley of the shadow of death, to realise all that is involved

to those in anxious waiting, to watch again the gradual emergence to life and strength, and the final restoration; all this brings a sense of satisfaction which surely can be seldom rivalled by success in other callings.

It is not meant to imply that considerations such as these are the dominant factors in the practitioner's life. Perchance they only emerge when there is time and opportunity for reflection. It is a frailty of human nature to realise while engaged in a given occupation all the difficulties thereof, and to realise the advantages only when these are no longer at hand. And the difficulties of the general practitioner's life are obvious enough: stress of work, little opportunity for rest and recreation, frequent financial hardship, contact with folly and ingratitude, all indeed that is involved in being "a body's body."

This intimacy of relationship has its concomitant danger in that it may tend to the submergence of the strictly professional aspect, and there is an element of truth in the warning, "Never have your friends among your patients." But, and more especially in country districts, this is a counsel of perfection. It may be difficult, but is not impossible, to be the doctor as well as the friend, and the harmonious merging of the two is one of the chief compensations of general practice. It was said of Lister:—

"In early life Lister belonged to a Society the members of which called all men Friends, and now in turn because of his inestimable beneficence and service to mankind, all men the world over call him Friend."

Such an epitaph may not without fitness be applied to many members of the profession in less exalted spheres, who, if they have passed hence unsung, have not passed unhonoured or unwept.

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ACCIDENTAL HÆMORRHAGE IN CONNEXION WITH ECLAMPSISM.

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IN my opinion Schmorl was right when he stated that puerperal eclampsia is a definite disease peculiar to pregnant women and their infants, and characterised by peculiar pathological changes, consisting chiefly in thrombosis of blood-vessels, necrosis of the cellular elements of tissues, and hæmorrhages. Such conditions are, of course, met with in other diseases, but never so widely distributed, or involving so many important organs, as in eclampsia. They were found by Schmorl in all the necropsies on women who had died from eclampsia, and were considered by him to be essential to, and characteristic of, the disease; therefore, when they were present the case was one of eclampsia, when they were absent it was not. Subsequently he found the same pathological conditions in cases which had died in coma, but without any convulsions; therefore they also were cases of eclampsia, though they had no convulsions.

There can, I think, be no doubt that the so-called pre-eclamptic toxæmia is also essentially the same disease whether it culminates in fits or not; and since all these conditions are, therefore, examples of one and the same disease it is desirable that they should be grouped under one name. Eclampsia and toxæmia are not definite enough for the purpose, because the former is commonly applied to convulsions of all kinds and is hardly applicable to those cases in which there are none. Toxæmia, also, is unsatisfactory, because there are toxæmias which are not, as far as we know, in any way connected with eclampsia. Dr. Bar has suggested, and I think it an excellent suggestion, that whilst retaining the term eclampsia for the cases in which there are convulsions, we might employ the word "eclampsism" for those in which there are none.

Accidental Hæmorrhage.

One of the essential features of the disease, as I have already stated, is hæmorrhage; most frequently small petechial hæmorrhages, but occasionally very extensive, serious, and even fatal in amount. Anyone who has much experience of eclampsia must have met with such cases where the bleeding occurred into the brain, the eye, under the skin, or into the peritoneal cavity. But it is only recently that our attention has been called to the fact that

they occur into the uterus also; and the association of accidental hæmorrhage with eclampsia, or rather with eclampsia, has attracted notice. It would be impossible, in the present state of our knowledge, to say in what proportion of cases it occurs, but from personal experience I am inclined to believe that most of the cases of severe, and especially of concealed internal hæmorrhage are due to this disease.

Since Rigby taught us to distinguish accidental from unavoidable hæmorrhage our knowledge of its nature and treatment has developed slowly. We discovered in course of time that such hæmorrhages are frequently associated with albuminuria, and that those in which the effused blood is wholly, or almost altogether, retained are much more serious than those in which it escapes freely from the vagina. In attempting to explain these facts, however, it was assumed that the albuminuria resulted from a nephritis which, by causing endometritis, produced a diseased and loosely attached placenta. All that I believe to be erroneous, the condition of the kidneys is more necrotic than inflammatory and in the cases examined by Whitridge Williams there was no endometritis.

The treatment of concealed hæmorrhage by abdominal section originated with Dr. William Bagot, now of Denver, Colorado, when my assistant in the Rotunda Hospital, and was successfully carried out by him upon a patient in the extern maternity. But it was several years after that any other operator ventured to follow his example, and when in 1910 Dr. Amand Routh published a report upon 1280 cases of Cæsarean section, collected from obstetricians living in Great Britain and Ireland, it contained only three which had been done on account of accidental hæmorrhage. Since then, however, abdominal section has been resorted to more frequently, and is now, I believe, regarded as generally advisable in those cases, at least, in which the patient is not in labour, and the hæmorrhage is more or less concealed.

Pathological Conditions.

Since the introduction of this treatment which, in my opinion, marks a distinct epoch in obstetric history, we have learned that the actual conditions are very different from what we had imagined them to be. We knew, of course, that the placenta was detached from the placental site, and that the uterus was distended with blood; and we assumed, from the fact that the effused blood was not expelled, that there must have been a weakening or paralysis of its walls, but we had no idea, or a wrong one, as to its cause. Now we know that the blood is poured not into the uterine cavity alone but also into its muscular wall, which is suffused with blood, separating and no doubt injuring its muscle cells; sufficiently explaining not only the yielding of the uterus to the pressure of the blood, but also the extreme difficulty which has sometimes been experienced in controlling post-partum hæmorrhage. In many of the reported cases there was hæmorrhage also into the pelvic cellular tissue, especially between the folds of the broad ligaments, and in some into the peritoneal cavity.

In two cases reported by Whitridge Williams, in which the uterus had to be removed, the microscopic examination showed that the hæmorrhages had spread apart the individual muscular fibres and bands, and in places was associated with considerable œdema; apparently it was not connected with the larger vessels. Section through the placental site showed similar changes in the muscular wall, but the decidua were normal except for small hæmorrhagic areas. In this region many of the larger veins were almost completely filled with large thrombi, and many of the smaller veins were almost occluded with thrombi. The large arteries were normal, but many of the small ones presented changes in the intima, suggesting a mucoid change, and it projected into the lumen and in many places defects were observable in it.

The principal pathological conditions present, therefore, were thrombosis of veins, necroses of the intima of the small arteries, and hæmorrhages into and œdema of the uterine walls. This remarkable condition of the uterus has during the last few years been frequently noted by other observers in connexion with accidental hæmorrhage, and at a meeting of the Obstetrical Section of the Royal Society of Medicine in November, 1916, no fewer than eight cases were reported. In all of them in which the urine was examined it contained albumin; five had large hæmatomata in the broad ligaments and two free blood in the peritoneal cavity. In all of them

not only was the placenta more or less detached and the uterine cavity filled with blood, but blood was also extravasated into the uterine wall, most markedly in the superficial layers, and especially under the peritoneal coat.

Causation.

Couvelaire described this condition as utero-placental apoplexy, and although he believed it to be a constant feature in accidental hæmorrhage, yet he regarded it as a result of over-distension of the uterus, and not as the cause. If he were correct in this assumption, and the hæmorrhages were merely the result of over-distension, then their connexion with eclampsia is not so obvious as I suppose it to be. But if, on the other hand, it can be proved that this condition is not caused by over-distension, that it only occurs in patients with other symptoms of toxæmia, and that the anatomical conditions associated with it closely resemble those which cause hæmorrhages in other parts of the body in eclampsia, then it would seem to me a justifiable conclusion that it is due to the same cause.

As regards the theory that the remarkable condition of the uterus is merely due to its over-distension I would refer to experiments carried out by Dr. Arthur N. Morse in Yale University Medical School.¹ His first endeavour was to discover whether sudden over-distension could produce such phenomena. With that object he exposed, by abdominal section, the uterus of a pregnant bitch, inserted a cannula into it, and injected saline solution until it was distended almost to bursting. No ill-effects excepting abortion followed, and when the abdomen was again opened, after 48 hours, the previously distended horn was found to be entirely normal, without any sign of injury. That experiment proved that even extreme and acute increase in intra-uterine pressure did not cause an extravasation of blood into the myometrium.

A further series of experiments was carried out with a view to ascertain what would be the results of venous obstruction in a pregnant uterus. He discovered that in pregnant rabbits, when all the veins returning blood from a pregnant horn had been ligated, it became deeply cyanosed and distended, at first fluctuant but ultimately firm, tense, and resistant to pressure. After about two to four hours it was enlarged to about twice its former size and was quiescent, muscular action having ceased. The uterine cavity was filled with blood, which surrounded the unruptured foetal sacs; the placenta were partially or completely separated from their attachment, and minute extravasations of blood were visible in the myometrium. The microscope showed hæmorrhagic extravasations in the decidua, and at various points in the uterine wall, as well as dissociation of the muscle fibres; in fact, in every particular an exact reproduction of the conditions found in cases of accidental hæmorrhage.

Illustrative Cases.

The following cases, which came under my notice during the past four years, support the contention that there is a close connexion between eclampsia and accidental hæmorrhage.

CASE 1.—Patient, admitted to the Rotunda Hospital in March, 1915, under Dr. E. H. Tweedy's care, was pregnant about seven months. Her face, legs, and thighs were œdematous. She complained of intense headache, dimness of vision, and vomiting; secreted very little urine, which contained numerous tube casts and became almost solid when boiled. The blood pressure was 200 mm. Hg; in fact, a typical example of the pre-eclamptic state. The usual treatment was adopted, under which she appeared to improve. But at the end of a week she suddenly complained of violent abdominal pain, and a bloody discharge, which was slight at first but gradually increased to a considerable hæmorrhage, escaped from the vulva. The vagina was plugged, but though it controlled the external hæmorrhage her general condition grew steadily worse. The abdomen appeared to become more distended and tender to pressure, and from her general symptoms it was evident that serious internal hæmorrhage was continuing.

On opening the abdomen a considerable quantity of free blood was found in its cavity, the source of which was discovered in the right broad ligament, and a ligature thrown around the ovarian vessels on that side prevented further loss. The uterus contained a large quantity of blood and a dead fetus, which were removed by the ordinary classical Cæsarean operation, the uterus being left. There was no post-partum hæmorrhage, and she left the hospital in good health.

CASE 2.—Patient, aged 30, was admitted to the Rotunda Hospital on Sept. 1st, 1917, at 8.40 a.m. Her two previous pregnancies had terminated normally at full term, and on this occasion she had noticed nothing unusual until the previous evening, when she was seized with abdominal pain, and a feeling of distension, and she noticed an increase in the size of her abdomen. When admitted to the hospital she was in a collapsed condition, blanched, and cold; temperature 96.4° F.; pulse

¹ Surgery, Gynecology and Obstetrics, February, 1918.

hardly to be felt. The uterus very hard and tender on palpation; no foetal parts could be made out, no visible hæmorrhage, urine scanty, loaded with albumin, casts in large number, some pus and red blood cells.

It was decided to operate as soon as possible. When the abdomen was opened the uterus presented a remarkable appearance, dark, almost blue, in colour, with blood extravasation in patches over its surface, the peritoneal covering being in places raised in large blebs filled with blood, one of which upon the posterior surface had burst, the rent being about an inch in length; and there was free blood in the peritoneal cavity. When cut through the uterine wall showed blood extravasation throughout. The cavity was filled with blood and the placenta completely detached; the child, of course, was dead. After the uterus had been emptied and the wound closed in the usual manner it contracted well after a dose of pituitrin had been administered hypodermically. There was no post-partum hæmorrhage and she made a good recovery, the urine being free from albumin before she left the hospital.

CASE 3.—Patient, aged 39, 9 para, 36 weeks pregnant, was sent to the Rotunda Hospital by Dr. T. W. Rice, of Portlinton, and admitted on Dec. 7th, 1917. Twelve years previously her first pregnancy terminated prematurely at the eighth month owing to eclampsia, preceded by headaches and disordered vision, and since then the sight in her left eye had been impaired. She had convulsions and was unconscious for a week; the child was stillborn. The four succeeding pregnancies were normal and the children lived. But after the birth of the last child she did not make a satisfactory recovery, and had subsequently three abortions.

On admission the patient said that she had been ill for about three weeks, suffering from headaches and impaired vision. There was a large ecchymosis on the left buttock. Her urine was scanty and of a bright-red colour, and contained a large quantity of blood and tubercles. The child could be easily palpated, its head presenting in the first position. The diagnosis was pre-eclamptic toxæmia, and she was treated in the manner formulated by Dr. Tweedy, and which has been adopted as a routine in the Rotunda Hospital for some years; nothing was given by the mouth but water and bicarbonate of soda. She got little sleep in spite of a hypodermic of morphia, and the total quantity of urine passed in the first 24 hours was 20 oz. and the blood pressure was 260 mm.

The following day there was no improvement, and some twitching in the muscles of her arms, for which she was given $\frac{1}{4}$ gr. morphia. During the following days there was little change in her condition until the sixth day, when she seemed to be rather better and had passed 31 oz. of urine during the previous 24 hours, but in quality it was the same, and the blood pressure was still 260 mm. Considering that she had been restricted to soda and water for five days since her admission to hospital and that she said that she had eaten nothing for two days before, I thought it advisable to give her some nourishment, so at 12.30 p.m. she took 4 oz. of milk with an equal quantity of barley-water. At 1.10 p.m. she complained of a violent pain in her abdomen and said that she could see nothing. She looked pale and collapsed. Her skin felt cold and clammy and was bathed in perspiration. The temperature was below normal and a little reddish discharge flowed from the vulva. Her abdomen was evidently larger, the uterus swollen, hard, and tender, and the fœtus no longer palpable. Her condition appeared to be almost hopeless, but being persuaded that her life could be saved in no other way, I determined to operate immediately.

The abdomen having been opened, the uterus presented the same remarkable appearance which I have already described, being much distended, of a dark bluish-purple colour, with numerous patches of ecchymosis on its surface. The wall when cut through showed blood extravasated throughout its substance. The placenta was completely detached, the cavity full of blood and clots, and the fœtus was dead. To save time, which appeared to be of vital importance, I closed the uterine wound with a running suture of chromicised gut; otherwise the operation was carried out in the usual manner. Towards its close the patient appeared to be dead, but with the aid of pituitrin and other restoratives she gradually came round and was removed to bed.

The patient made a good recovery, although in consequence of her toxæmic condition we thought it advisable for three days more to give her nothing but soda and water. After delivery the urine rapidly improved both in quantity and quality, so that on the fourth day it was normal in colour and free from albumin.

Comments on Cases.

I have not reported these cases as exceptional, but, on the contrary, as being such as are generally met with in cases of severe accidental hæmorrhage. I believe that the detachment of the placenta and the hæmorrhage in such cases are caused by thrombosis of the veins of the placental site, probably due to toxæmia, and that the disease is the same as that which causes puerperal convulsions.

Those are the chief points that I wish to emphasise, but there are two others to which I shall allude. One is that in none of the cases was it necessary to remove the uterus—indeed, had I done so in the third I am certain she could not have recovered; and the other as regards dietary. It is generally believed that a milk diet is necessary in these cases, and there is no doubt that it is better than any other kind of food. But Dr. Tweedy maintains—and I agree with him—that water only is much better even than milk, and the fact, which I have noted in the third case, that serious aggravation of the patient's condition has followed the ingestion of even a small quantity of milk has been observed by us on several occasions. In answer to the question as to how long a patient can be restricted to water alone I would call attention to the fact that this woman had nothing, with the exception of 8 ounces of barley-water and milk, but soda and water for eight and possibly for ten days, and yet she recovered.

Dublin.

THE DIFFERENTIAL DIAGNOSIS OF AMOEBIC AND BACILLARY DYSENTERY FROM THE BLOOD.

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THE early, and at the same time correct, differentiation of amoebic and bacillary dysentery is a matter of very considerable importance from the point of view of treatment; for whereas in amoebic dysentery it may be possible to withhold emetine for a few days without any dire result, in bacillary dysentery it is certainly inadmissible to delay the administration of serum. Unfortunately, the present diagnostic methods of dysentery are by no means simple; they take up a considerable time, require a certain amount of skill, and presuppose the existence of a well-equipped laboratory. On active service these conditions are not always obtainable.

In the present paper an attempt has been made to arrive at a simple method of differential diagnosis from an examination of the blood alone. It must in the first place be remembered that the underlying pathology of amoebic and bacillary dysentery is absolutely dissimilar. The former condition is produced by the action of a protozoan which by means of a proteolytic enzyme sets up a colliquative necrosis of the tissues in its immediate vicinity, the latter condition is of the nature of a well-marked bacillary toxæmia.

Description of Tests.

In the differentiation of amoebic and bacillary types of dysentery the two following reactions have been used: (1) the iodine reaction in the polymorphonuclear leucocytes; (2) the production of nuclear pseudopodia in the polymorphonuclear leucocytes.

1. It has long been known that in certain pathological conditions the polymorphs, when treated with dilute iodine in dry blood films, give a glycogen reaction, but it is only recently that Bond¹ and others have shown that even in health a large proportion of the white blood corpuscles normally give under certain conditions a reaction with iodine which is closely related to the glycogen reaction met with in certain diseases. When normal white blood cells are incubated for a quarter of an hour at 37° C. and are subsequently treated with a 1 per cent. solution of iodine in water and potassium iodide a certain number of the white cells show the presence of one or more mauve-coloured droplets. These droplets gradually coalesce to form one large drop, which eventually breaks the lining membrane of the cell and escapes into the surrounding medium. The particular cells which show the presence of this iodophile substance are certain of the polymorph leucocytes. The actual technique for the demonstration of the iodine reaction is as follows:—

A drop of blood from the finger is placed in a Ponder's plasticine cell² and incubated for one hour at 37° C. During incubation the white blood corpuscles pass out from the clot and adhere to the cover-glass above and the slide beneath. The cover-glass and cell are then removed and the clot is washed away with normal saline. Two films of leucocytes are thus obtained, which are mounted in the 1 per cent. solution of iodine in potassium iodide. All the cells in contact with the iodine take on a yellowish tint, but, as before mentioned, certain of them show the presence of mauve globules in the protoplasm. In the normal individual the number of cells giving the reaction is roughly 50–60 per cent. Bond, however, has pointed out that in conditions associated with the presence of bacillary toxins in the blood the amount of iodophile substance is increased, as there is a large increase not only in the number of cells actually giving the reaction, but also in the amount of iodophile substance present in the individual cells. This increased iodine reaction persists in the blood for a fortnight or three weeks after the disappearance of the active symptoms of the disease. Applying the above reaction to the case of bacillary dysentery, it is found that the number of white cells giving the iodine reaction is 60–80 per cent., while the increase in the amount of iodophile substance is also well brought out. By this means, therefore, we have a method, with certain reservations, of determining whether the dysenteric infection is due to a bacillus or not. It is necessary, however, to exclude any recent septic infection, such as a sore-throat or whitlow, since such a condition produces a similar iodophile condition in the blood.

In one of the earliest cases examined—an amoebic infection—the blood gave a well-marked iodine reaction, a

phenomenon only explained when it was found that the patient had a suppurating venereal bubo in the groin.

In addition, in long-standing amoebic infections where there is secondary bacillary infection the blood may also give a well-marked iodine reaction.

2. The formation of nuclear pseudopodia. An examination of a large number of polymorph leucocytes derived from healthy individuals reveals the fact that in a very small percentage of cells the nuclei are furnished with finger-like processes, or pseudopodia. These processes are usually classified into three types: (1) pyriform; (2) blunt or sessile; (3) spiculated. The cause of the formation of these pseudopodia is at present unknown, except in so far as they appear to be due to active nitrogenous metabolism.

Gruner,³ who has studied their production, has found that they are produced by a purin-containing diet, while they are also numerous in carcinoma, except in those cases where the tumour is so circumscribed that the cancerous excreta cannot enter the blood stream. An examination of the blood films from cases of amoebic dysentery reveals the fact that in this condition also there is a large increase in the production of nuclear pseudopodia. This increase is noticeable on the second or third day of the disease. Thus in amoebic dysentery the percentage of polymorphs with pseudopodia was found to vary from 12.5 per cent. to 52 per cent., the average being 18 per cent., while in bacillary dysentery the percentage obtained varied from 0 to 11. Out of 50 cases of bacillary dysentery examined the percentage of polymorphs with nuclear pseudopodia was in no instance above 12. It is interesting to note that in two cases of liver abscess without any dysenteric symptoms the number of cells with nuclear pseudopodia was 25 per cent. and 27 per cent. respectively.

A very large number of blood films from various pathological conditions have been examined for the production of nuclear pseudopodia, with the result that the only other condition in which the change could be found was chronic tuberculosis of the lungs. Provided, therefore, that the patient is living on a purin-free diet and that it is possible to exclude cancer and pulmonary tuberculosis, the formation of nuclear pseudopodia in a case of dysentery is highly suggestive of an amoebic infection.

Conclusion.

Taken in conjunction, the two tests above described enable an accurate diagnosis of the type of dysentery to be given at an early stage of the disease in at least 90 per cent. of cases. The occurrence of a well-marked iodine reaction without the formation of nuclear pseudopodia is suggestive of a bacillary infection, while the absence of the iodine reaction and the presence of nuclear pseudopodia naturally point to an amoebic origin. Should a well-marked iodine reaction occur in conjunction with the formation of nuclear pseudopodia the possibility of a mixed infection should not be overlooked.

References.—1. Bond: The Influence of Antiseptics on the Activities of Leucocytes and on the Healing of Wounds, Part III., Brit. Med. Jour., Feb. 3rd, 1917. 2. Ponder, THE LANCET, Dec. 12th, 1908. 3. Gruner: The Leucocytes in Malignant Disease, British Journal of Surgery, vol. III., No. 2.

NASAL OBSTRUCTION IN AVIATORS.

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THE science of aeronautical medicine is still in its infancy. Researches pursued in various directions have proved that the successful pilot must possess a sound heart and sound lungs, a stable nervous system and a healthy "mentality."

Scarcely less important is the possession of good binocular vision and of normal ears. The ear-mechanism obviously becomes a more essential factor in flying when we remember to regard the ear not only as the organ of hearing but as an accessory organ of equilibration. Although the aviator depends mainly on his sense of vision it is, perhaps, a matter of regret that the sense of equilibration, a sense so highly developed in birds, and so readily accurately estimated in man by the Bárány tests, has received so little attention from those who have, in this country, studied the medical aspects of aviation. Into the rationale of those tests and their relationship to aviation I do not propose to enter in this short paper, but would merely refer to one aspect of the subject which is well worthy of notice—i.e., the question of nasal obstruction.

To the flying man free nasal respiration is an important asset. The statement will meet with general acceptance, though the reasoning on which it is based may not be so

widely understood. During the past few months I have had occasion to examine and operate upon a considerable number of officers and cadets suffering from nasal obstruction, and although I have followed the subsequent flying history in only a few instances certain interesting facts have come to light.

Results of Nasal Obstruction.

The main conclusions regarding the baneful effects of nasal obstruction on the aviator may be summarised as follows:—

1. *Effect on the lungs.*—The mouth-breather cannot satisfactorily expand his chest, and his lungs are never sufficiently aerated. Mendel has demonstrated experimentally the inferiority of respiration by the mouth and has shown that the amount of air which the mouth-breather inhales with each breath is less by one-fifth than the amount inhaled in normal nasal respiration. It follows, then, that if the subject be an aviator he will readily suffer from symptoms of "oxygen-want." This aspect of "oxygen-want" probably deserves further investigation.

2. *Effect of equilibration.*—The Eustachian tubes, the function of which is to adjust the pressure of air within the middle ear to the changes produced by sound-waves, atmospheric pressure, &c., and which come into use so largely during flying, are impaired in their function if any nasal obstruction is present. During a rapid descent the tympanic membranes are driven inwards by atmospheric pressure, causing deafness and earache. Normally those symptoms disappear if the ears are "inflated" by swallowing or by movement of the jaw. But if the nasal passages be blocked so that air does not freely reach the Eustachian tubes the alteration of pressure within the middle ear cannot be compensated and the symptoms persist, perhaps with the addition of giddiness caused by altered labyrinthine tension, communicated from middle to inner ear through the round and oval windows. Under such circumstances the risk of a crash is, naturally, considerable.

3. *"Reflex" effects.*—A third possible result of nasal obstruction is headache coming on in the air or after landing. This is in many cases due to the pressure of a deflected nasal septum against the middle turbinal, the so-called reflex nasal headache. Headache of this type is, of course, not peculiar to aviators, but is aggravated by flying for reasons to be presently described.

Causes of Nasal Obstruction.

The commoner causes of nasal obstruction are adenoids, hypertrophic rhinitis, and septal deviations.

Polypi were encountered on only one occasion in the present series. Adenoids were present in many cases, accompanied, as a rule, by enlarged and septic tonsils, but in few cases were the postnasal growths so large as to cause much nasal obstruction. They were, however, liable to attacks of inflammation, and then the Eustachian tube became blocked, not by adenoid tissue, but by the mucus and pus which that tissue secreted.

Hypertrophic rhinitis, affecting the anterior or posterior ends of the lower turbinal, was fairly common and was readily cured by partial turbinectomy.

Deformities of the nasal septum were the cause of the obstruction in the majority of cases. As a rule the patient gave a history of former injury at boxing or football. Some of those definitely traumatic cases had almost complete obstruction of both nostrils. In others the symptoms were nil, and the patient was unaware of any nasal trouble until he came before the examining board.

Aggravated cases of septal deformity naturally call for treatment before the subject can be passed as fit for flying, but the wisdom of operating on minor degrees of septal deviation in cadets is questionable. Absolute symmetry of the septum nasi is a rarity among civilised races, and an examination of over 2000 skulls has revealed deformity of the bony septum in 75 per cent. (Morell Mackenzie). At the same time it is to be noted that a degree of nasal obstruction which would cause little trouble on the ground may be very troublesome in the air. At heights over 7000 to 10,000 feet the mucous membrane of the nose becomes swollen and engorged, and any existing obstruction is thus greatly aggravated.

This is borne out by the following typical reply to an inquiry addressed to one of the patients: "Before the operation," he writes, "I was compelled, when flying, to breathe through my mouth; this was difficult to do and was irritating to the throat, especially when I flew a fast scout at heights over 8000 feet and in cold weather. The operation has cured

this trouble, and I have since flown at 12,000 feet and over with no difficulty whatever."

Treatment.

The treatment of the cases in question is a matter of some importance. The main object, from a military point of view, is to render the patient fit as rapidly as possible. To this end it is advisable to employ local anæsthesia for septum cases. A method which answers well is to pack both nasal cavities half an hour before operation with 10 per cent. cocaine, and at the same time give a hypodermic of morphine and atropine. The patient complains of little discomfort during the submucous resection, even if one has to gouge away part of the maxillary crest.

After-treatment consists in packing both sides with ribbon gauze wrung out of liquid paraffin, a dressing which adapts itself to the tissues and is easily removed on the following day. Treated in this way septum cases need remain in hospital for only a few days.

In conclusion, it may be remarked that while commercial aviation will naturally impose much less strain upon the pilot than "war" flying, nevertheless the medical problems of aeronautics should be studied more and more in the future, and it is only by attention to such minor details as those indicated above that knowledge can be advanced and tests standardised. Aviation can only be developed on a sound footing by the mutual researches of the designer, the mechanic, the pilot, and the doctor.

POST-INFLUENZAL HÆMOPTYSIS.

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ATTENTION has been drawn to the occurrence of epistaxis and other hæmorrhages in the recent epidemic of influenza, and there has also been a large group of cases in which hæmoptysis occurs which may readily be mistaken for pulmonary tuberculosis. These cases are often puzzling and may lead to erroneous diagnosis, and have to be carefully differentiated from those cases which drift almost insensibly from influenza into acute pulmonary tuberculosis.

As a rule the hæmoptysis in influenzal cases commences towards the end of the illness, when there is slight cough, an increasing weight, and no great tendency to wasting. The sputum shows a bright red staining, and not the typical rusty tint of acute pneumonia. Pneumococci are the predominant organisms and tubercle bacilli are absent.

The characteristic physical signs are generally marked by their bilateral posterior distribution in the suprascapular areas, where breath sounds are faint and moist granular adventitious sounds are abundant, with no bronchial breathing and some bilateral impairment of the percussion note. The corresponding areas in front show little or no change, excepting some lack of resonance on percussion. The mid-area of the lungs posteriorly is fairly clear, but the bases show congestive crepitation on both sides.

The temperature for a time is irregular and fluctuating, and the pulse-rate not so rapid as would be the case in a tubercular bacillary toxæmia corresponding to similar physical signs.

Careful observation of these cases for a few weeks will show subsidence of physical signs and temperature, with increasing weight and improved general condition. If, therefore, with slight hæmoptysis the physical signs are bilateral and chiefly marked posteriorly it is well not to be too precipitate in diagnosing pulmonary tuberculosis, but to make frequent examinations of the chest and sputum while taking the general progress of the case into consideration. Many of these cases have proved to be pneumococcal and transient, and a hasty diagnosis of tuberculosis on the ground of hæmorrhage may cause considerable distress.

As regards the physical signs the converse also holds good, and monolateral anterior signs with hæmoptysis give rise to much more suspicion of early pulmonary tuberculosis, particularly with no regain of weight on convalescence, rapid pulse, and night sweats.

So many cases of each type have come under the writer's notice during the last 12 months that he hopes these notes taken from his cases may be some guide to others when diagnosis is doubtful.

NOTE ON

STAPHYLOCOCCUS AUREUS SEPTICÆMIA

AS A COMPLICATION OF INFLUENZA IN AN EPIDEMIC
IN MALTA.

By ADAM PATRICK, M.D. GLASC.,

TEMPORARY CAPTAIN, R.A.M.C.

With a Note by Colonel Sir A. GARROD, K.C.M.G., A.M.S.

IN the bacteriological examination of a number of cases of influenza and broncho-pneumonia which have come under treatment in military hospitals in Malta it has become increasingly apparent that in this epidemic a secondary infection with *Staphylococcus aureus* is a not infrequent and a very serious complication. Attention was first directed to this point by the post-mortem findings in the case of a soldier who died on July 5th.

After this condition was recognised it was seen that the cases in which *Staphylococcus aureus* was found were frequently those of a severe type of broncho-pneumonia, with characteristic symptoms. I am greatly indebted to Colonel Sir A. Garrod for the following note descriptive of cases of this type:—

Note on Symptomatology by Colonel Sir A. GARROD.

"In the present epidemic of influenza in Malta the cases have been, for the most part, of a mild character, but amongst them, as always, cases of broncho-pneumonia have occurred and a small proportion of deaths. In a number of cases there have been pulmonary troubles of a peculiar kind, such as I have not seen in previous epidemics. Such cases occurred chiefly in groups of men coming from special centres.

These patients present a well-defined clinical picture, unlike that of ordinary influenzal pneumonia. After the subsidence of a short primary fever the temperature rises again, and the condition of the sufferer suddenly becomes grave. He acquires a cyanotic tint, his breathing becomes shallow and very rapid, from 40 to 60 respirations per minute. He is anxious about his state at first and begs to be put out into the open air, but later he becomes apathetic, drowsy, and appears not to hear what is said to him. He may lapse into coma, with picking at the bedclothes, or may even develop a condition of coma-vigil. Delirium of a muttering kind, or even of more active form, usually preceded the onset of coma. On the other hand, some patients remain conscious and anxious throughout, convinced that they are going to die.

The pulse is rapid and the temperature high, reaching 104° F. in some cases, 105° in a few. The tongue is dry and covered with a thick brown fur, and its clearing is one of the earliest signs of improvement. The sputum is almost invariably rusty or pink during the attack, and in some cases there is definite hæmoptysis. The spleen is sometimes enlarged, but I fancy that this is an outcome of local conditions. The urine usually contains albumin, a trace to a dense cloud. The physical signs are scanty considering the conspicuous embarrassment of breathing. Large areas of impaired resonance or dullness, chiefly over the lower lobes behind, and scattered crepitations, and sometimes pleural friction are the usual signs. Bronchial breathing is not usually heard. The temperature may maintain an even high level or may fall suddenly with symptoms of collapse, only to rise again in a few hours. Death may occur during an attack of collapse, but more often is ushered in by steadily increasing dyspnoea with increasing cyanosis.

The whole clinical picture is that of gradual suffocation. The pulse seldom falls seriously before the approach of death unless there be an attack of collapse. The cases recall those rare examples of acute oedema of the lungs in children, and, as Professor Zammit first pointed out to us, general oedema of the lungs is found post mortem. In cases ending in recovery the temperature falls by somewhat rapid lysis commencing on the eighth or ninth day of the secondary fever. The rate of respiration falls gradually, the colour improves. In some cases the sputum remains rusty for some days after the temperature falls."

Bacteriological Examination of Sputum.

The sputum of 50 patients with influenzal broncho-pneumonia has been examined bacteriologically (Table I.) Nine of these 50 patients died, and *Staphylococcus aureus* had been found in the sputum of seven of them. The nine others who had shown staphylococcus recovered, though

TABLE I.—Organisms found in the Sputum of 50 Patients with Broncho-pneumonia.

| Organism. | Times found. | Organism. | Times found. |
|---------------------------------|--------------|---|--------------|
| Pneumococcus | 45 | Spirochæte (Vincent type) .. | 6 |
| Micrococcus catarrhalis .. | 22 | Gram-positive cocci (other than above) .. | 5 |
| Streptococcus | 21 | Yeast | 2 |
| Sarcina | 18 | <i>B. influenza</i> | 1 |
| <i>Staphylococcus aureus</i> .. | 18 | <i>B. septus</i> | 1 |
| Gram negative bacillus .. | 13 | | |

several had a severe attack. The amount of this organism grown from the sputum of the fatal cases varied, being sometimes a small growth mixed with other organisms, and once an abundant pure culture.

Post-mortem Findings.

The bodies of six of the nine patients who died, and also the bodies of five others in whose case the sputum had not been investigated, were examined post mortem. Of these 11, nine gave evidence of staphylococcus septicæmia. In the two other cases staphylococcus was obviously not the cause of death. The post-mortem findings may be summarised.

The lungs of the nine staphylococcus cases showed broncho-pneumonia, not always extensive, but there was widespread congestion and noticeable oedema. No considerable area of lung tissue was found pink and spongy. The oedema tended to affect not only the pneumonic portions of the lungs but also those parts which remained unconsolidated. A section of the lungs a watery, frothy, slightly blood-tinged fluid exuded on slight pressure. In one case the amount of this fluid was excessive, and the lungs weighed 50 oz. and 42½ oz. respectively.

The broncho-pneumonic areas were not densely consolidated, but the process had a special tendency to go on towards abscess formation, and four stages could be distinguished:—

1. Broncho-pneumonia present, but consolidation not very firm; lung dark brownish-red on section; cut surface smooth; exudation of slightly blood-stained watery fluid on pressure.
2. Surface of cut lobule coarsely granular, and slightly raised from surrounding area of lung, but not quite so dark in colour as in stage 1; exudation of oedematous fluid on pressure, but in addition appearance of beads of pus in the cut bronchioles.
3. Cut surface very distinctly raised and coarsely granular, with numerous miliary abscesses visible in the substance.
4. Lung tissue largely destroyed and lobule converted into a collection of abscesses separated by fibrous septa.

The distribution of these stages was lobular and a sharp line of demarcation could be made out between stages 1, 2, and 3 on the cut surface. The broncho-pneumonic process tended to involve especially the greater portion of the lower lobes, and the inner half of the upper lobes. The lower anterior edge of the lower lobe was nearly always spongy. In most of the cases the process had not progressed as far as the formation of visible abscesses. In six out of the nine there was no obvious evidence of pus, but abscesses were present in some part of the lungs in the three others.

Three cases showed empyema, from all of which *Staphylococcus aureus* was obtained in pure culture. In a case with double empyema smears of the pus showed pneumococci on one side and pneumococci and streptococci on the other, but the only growth on culture was of staphylococcus.

The spleen was generally enlarged, in one case weighing 14 oz. and in two others 13 oz. The substance, as a rule, was of normal consistence and appearance. In the case of a patient with well-developed abscesses in the left upper lobe it was small (2½ oz.), pale, and soft. Considerable oedema was sometimes observed in the liver. The condition of the other organs called for no remark.

Two other cases remain to be mentioned.

In one of these there was considerable abscess formation and oedema in both lungs and their general appearance resembled that of the staphylococcus cases, except that the consolidated areas were denser than in any of them. Very numerous pneumococci had been found in the sputum during life and after death extensive acute pleurisy was found, with un-mixed pneumococci in the fibrinous exudate. Pneumococcus, sometimes mixed with a Gram-negative bacillus, was grown from most of the organs. It was isolated in pure culture from the spleen. A few colonies of *Staphylococcus aureus* were grown from the right lung, but the pus formation and the septicæmia could not be attributed to it. This patient was already ill when he arrived on the island, and it was not certain, though probable, that he was suffering from influenza. Clinically he had been regarded as different from the staphylococcus cases.

In the other fatal case in which staphylococcus was not found the appearance of the lungs was quite different. There were about 2 oz. of pus in the left pleural cavity, and the lower lobe of each lung was deeply congested and in a state of splenisation. The distribution of the consolidation was lobular. The right upper and middle lobes and the left upper lobe were light pink in colour and showed no congestion or oedema. Streptococcus in pure culture was grown from the left lower lobe and streptococcus mixed with a few sarcinae from the right lower lobe and the empyema.

Table II. shows the result of cultures from organs in the 11 cases, and also whether *Staphylococcus aureus* had been found in the sputum during life.

In four cases in which it was estimated the leucocyte count was rather low—4000 (staphylococcus case), 7800, 6800 (staphylococcus case), and 6800 per c.mm. Blood cultures were taken from five patients and no growth resulted in any. One of these was made two days before death in a case in which staphylococcus was afterwards found in the heart blood.

Staphylococcus aureus is rather a rare organism in the respiratory tract, and in ordinary circumstances the tissues seem to have adequate powers of resisting it. It is not so

TABLE II.—Cultures from Organs in 11 Fatal Cases of Broncho-pneumonia.

| Organ. | Case. | | | | | | | | | | |
|-------------------------|-----------------|----|-----------------|----|-----------------|-----------------|-------------------|-----------------|------------------|------------------|-----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Heart blood | S. | S. | S. | — | — | — | S. ² | — | S. | Pn. | S. ³ |
| Right lung | S. ¹ | S. | S. | — | — | S. | Str. ⁴ | S. | S. | Pn. ⁵ | S. ³ |
| Left lung | — | — | — | S. | S. ² | S. | Str. | S. | S. | Pn. ⁵ | S. ³ |
| Right pleural cavity .. | — | — | — | — | — | — | — | Sar. | — | — | — |
| Left pleural cavity .. | — | — | — | — | — | — | Str. | S. | Bac. | — | — |
| Spleen | S. | S. | S. | S. | S. | S. | S. ⁴ | — | — | Bac. | S. ³ |
| Liver | — | S. | S. | S. | S. | S. | S. ⁴ | — | — | Bac. | — |
| Gall-bladder | — | S. | S. | — | — | — | — | — | — | — | — |
| Right kidney | — | S. | — | — | — | S. | — | — | Pn. ⁵ | — | — |
| Left kidney | — | S. | — | — | — | — | — | — | Pn. ⁵ | S. | — |
| Sputum (during life) .. | — | S. | S. ⁵ | — | S. ⁵ | S. ⁵ | No S. | S. ⁵ | No S. | — | — |

Organisms found in pure culture except where otherwise stated.

S. = *Staphylococcus aureus*. Str. = Streptococcus. Pn. = Pneumococcus. Sar. = Sarcina. Bac. = Gram-negative bacillus. — = No growth.

¹ Almost pure culture. ² Mixed with pneumococcus. ³ With a Gram-negative bacillus in small numbers. ⁴ With a few sarcinae. ⁵ With other organisms.

with some of these cases of influenza, in which the sequence of events emphasises the fact that when conditions are favourable to its dissemination throughout the body *Staphylococcus aureus* is an organism of great malignancy. The examination of the sputum in most cases of broncho-pneumonia gives little information, but the results of this short series show that in influenzal broncho-pneumonia it may be of some value in estimating the prognosis.

ON SOME SIMPLY PREPARED CULTURE MEDIA FOR *B. INFLUENZÆ*

WITH A NOTE REGARDING THE AGGLUTINATION REACTION OF SERA FROM PATIENTS SUFFERING FROM INFLUENZA TO THIS BACILLUS.

BY ALEXANDER FLEMING, F.R.C.S. ENG.,

TEMPORARY CAPTAIN, R.A.M.C.; HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS.

(From the Research Laboratory attached to a Base Hospital in France.)

THE traditional text-book method for the growth of *B. influenza* was agar to which a certain amount of fresh blood or blood corpuscles had been added. On such a medium *B. influenza* showed very tiny pin-point colonies sometimes very difficult to see with the naked eye. More recent investigations have shown that much more copious growths can be obtained when the added blood has been altered in various ways.

Fitzgerald and Cohen (*Centralblatt für Bacteriologie*, 1911) obtained greatly enhanced growths by heating the blood to 80°C. for three minutes.

Matthews (*THE LANCET*, July 27th, 1918) showed that very profuse growths occur when the blood has been digested with an excess of trypsin for five days at 37°C.

Levinthal (quoted in the October number of the "Medical Supplement to the Daily Review of the Foreign Press") obtained profuse cultures by adding blood to agar in the proportion of 1 to 20, then boiling and filtering the medium.

The object of the present communication is to emphasise the advantages of blood altered in various ways on the growth of *B. influenza* and to indicate certain very simply prepared media on which enormous growths can be obtained. The author has had the opportunity of seeing and making many cultures of *B. influenza* on agar with blood digested with trypsin, as for some years at St. Mary's Hospital all our *B. influenza* vaccine was made from cultures on this medium, and there is no doubt as to the wonderfully profuse growths which can be obtained from its use. The preparation of the medium is, however, cumbersome, as it takes four or five days for the trypsin to produce the necessary change in the blood. It is thus impracticable to use such a medium if it is desired to make cultures of *B. influenza* without previous warning unless a stock of the medium is kept on hand. It also requires sterile blood and sterile trypsin, which are not always to hand. It would be of considerable advantage, therefore, if the same profuse growth could be obtained on a medium which could be prepared on the spur of the moment and which did not necessitate the use of materials not readily obtainable. The following observations show that this can be done.

Blood boiled in agar.—If blood is added to a tube of agar and boiled for one minute the whole of the colouring matter of the blood and the coagulable proteid is precipitated in masses. The tube can then be sloped, and before the agar cools sufficiently to become solid the whole of this precipitate will have settled to the bottom, leaving the upper part of the medium clear. If *B. influenza* is planted on this an enormous growth results. The same result is obtained if blood corpuscles only are used.

The amount of blood which it is necessary to add is indicated in Table I.

TABLE I.—Blood added to 5 c.cm. agar, boiled, cooled, and planted with *B. influenza*.

| Amount of blood added. | Resultant growth. |
|------------------------|---|
| 0.25 c.cm. | Copious confluent growth. |
| 0.12 " | " " " (not quite so heavy). |
| 0.06 " | " " " (colonies like streptococcus). |
| 0.03 " | " " " (colonies small and growth scanty). |
| 0.01 " | " " " (colonies small and growth scanty). |
| 0.005 " | No visible growth. |

Blood boiled with water and the resultant fluid added to agar.—If 1 c.cm. of blood is boiled with 9 c.cm. water the whole of the colouring matter of the blood and the coagulable proteid is precipitated in masses which rapidly separate, leaving a clear, colourless, watery fluid.

It may be necessary to add a small amount of acetic acid to get complete precipitation, but the amount of acid added should not be enough to neutralise the alkalinity of the blood. It is not material to the growth of *B. influenza* whether the liquor obtained is clear or whether it contains debris of altered blood. Clear fluid has, however, the advantage that it gives a transparent medium indistinguishable in appearance from ordinary nutrient agar.

This fluid is added to liquid nutrient agar and sloped. On planting with *B. influenza* a very profuse growth takes place.

The following experiment (Table II.) shows the quantity of this fluid which it is necessary to add to 5 c.cm. of agar.

TABLE II.

| Quantity of fluid added. | Corresponding to original blood volume of— | Resultant growth. |
|--------------------------|--|---------------------------|
| 1 c.cm. | 0.1 c.cm. | Copious confluent growth. |
| 0.5 " | 0.05 " | " " " |
| 0.25 " | 0.025 " | Copious colonies (small). |
| 0.12 " | 0.012 " | No growth. |

The whole of the coloured fraction of the hæmoglobin is precipitated from the blood by boiling and only a colourless watery fluid is added to the agar. It is clear, therefore, that whatever is the nature of the substance which favours the growth of *B. influenza*, it is not, as was generally supposed, the coloured element of hæmoglobin.

Blood broken down by acids.—If to blood is added an equal volume of a normal solution of one of the strong mineral acids, such as sulphuric acid, the red colour is immediately changed to brown by the breaking down of the hæmoglobin. If now an equivalent volume of normal caustic soda is added, a brown precipitate is formed and a brownish fluid separates.

It is important to test the reaction of the fluid after the addition of the caustic soda to see that the reaction is only faintly alkaline to litmus as a small error in the quantities of acid or alkali of this strength makes an enormous difference to the reaction of the medium, and consequently to the growth of the bacillus.

If this fluid is added to liquid agar it furnishes a medium on which the most profuse cultures of *B. influenza* can be obtained. It would appear, therefore, that so far as the growth of *B. influenza* is concerned sulphuric acid will effect the same change in blood in less than one minute that it takes trypsin four or five days to produce.

The quantities of fluid necessary to add to 5 c.cm. of agar are shown in Table III.

TABLE III.

| Quantity of fluid added. | Corresponding to original blood volume of— | Resultant growth. |
|--------------------------|--|-----------------------------------|
| 1 c.cm. | 0.1 c.cm. | Copious confluent growth. |
| 0.5 " | 0.05 " | " " " |
| 0.25 " | 0.025 " | " " " (not quite so heavy). |
| 0.1 " | 0.01 " | Copious growth of small colonies. |

The best proportions in which to mix the fluids seem to be as follows: Blood, 1 part; water, 5 parts; normal sulphuric acid, 1 part. This mixture can be boiled and stored at room temperature for some weeks without deterioration.

This medium, which certainly gives as copious growths of *B. influenza* as any other, is very easy to prepare, and it has the additional advantage that it does not require sterile blood. The sulphuric acid is a very powerful antiseptic and rapidly

sterilises the blood, even if it is very badly contaminated. This is brought out in the following experiment.

1 c.cm. of blood was added to 5 c.cm. of tap water and the mixture was then heavily contaminated with faeces. 1 c.cm. of normal sulphuric acid was then added, and the tube, after being shaken, was left at room temperature for half an hour, when 1 c.cm. of normal caustic soda was added. Of the resultant fluid 1 c.cm. was added to liquid agar, sloped, planted with *B. influenza* and incubated at 37° C. An extremely copious growth of *B. influenza* resulted, the medium being otherwise sterile.

It has been found that on media prepared from blood altered in these ways other organisms, such as staphylococci, do not exercise any symbiotic action on the growth of *B. influenza*. It would appear, therefore, that the change produced in the blood by boiling or by strong acids is of a similar nature to that effected by these organisms which exercise such a powerful symbiotic effect on *B. influenza* when unaltered blood is used.

Agglutination of *B. influenza* by serum of men suffering from influenza.—From the media described above very good emulsions of the bacillus can be obtained for agglutination purposes.

The sera of 21 patients suffering from influenza were examined for agglutinins to *B. influenza*. Wright capillary tube method was used, and the tubes were incubated at 50° C. for two hours before readings were made. The results were as follows:—1 serum agglutinated the bacillus up to a dilution of 1 in 1000; 2 sera up to 1 in 128; 3 sera up to 1 in 64; 10 sera up to 1 in 32; 4 sera up to 1 in 16; and 1 serum up to 1 in 8.

The duration of the disease in these men had been from three days to three weeks, but most of them were convalescents about seven to ten days after the onset. It will be seen that all the patients' sera agglutinated *B. influenza* to some extent, whereas none of the control sera tested showed any agglutination even in a 1 in 4 dilution. It follows from this that *B. influenza* is either the cause of the disease, or it is an extremely common secondary infection, and if it is a secondary infection then it follows the primary infection very rapidly, as agglutinins had developed in one case only three days after the onset.¹

A differential medium for isolating *B. influenza*.—It has long been known that certain dyes, among them brilliant green, had the power of inhibiting the growth of Gram-positive bacteria to a very much greater extent than Gram-negative bacteria. It was thought that possibly, now we have a medium which grows *B. influenza* luxuriantly, the addition of a small amount of brilliant green to the medium might allow the growth of this bacillus while inhibiting the growth of the cocci which commonly exist in the sputum.

Agar was made up containing some of the clear fluid obtained by boiling blood and water, and to this was added brilliant green in a strength of 1 in 500,000. On this was planted *B. influenza*, staphylococci, streptococci, and pneumococci. After incubation a profuse culture of *B. influenza* was obtained, whereas all the cocci were completely inhibited. I suggest, therefore, that such a medium might prove extremely valuable in isolating *B. influenza* from a sputum where it occurs, as it commonly does, mixed with streptococci or pneumococci.

A medium for preserving the vitality of *B. influenza*.—In certain quarters there has been difficulty in preserving alive cultures of *B. influenza*.

If this bacillus is planted into minced meat medium such as is commonly used for growing anaerobes to which a little blood has been added, it will preserve its vitality for a considerable period. Subcultures from this medium after six weeks gave growths as copious as after two days.

Summary.—Very profuse growths of *B. influenza* can be obtained (1) from blood boiled in agar; (2) from agar to which has been added some of the clear colourless fluid resulting from boiling blood in water; (3) from agar to which has been added blood which has been broken down by a strong mineral acid. If a strong mineral acid is used to break down the blood sterile blood is not required. The substance which stimulates the growth of *B. influenza* is not the coloured fraction of hæmoglobin.

By the addition of brilliant green to the medium pneumococci, streptococci, and staphylococci are inhibited to a much greater extent than is *B. influenza*.

Cultures of *B. influenza* can be kept alive for a considerable period on a blood meat medium.

All the patients tested who were suffering from influenza agglutinated *B. influenza*.

¹ Further work in this direction has shown that different strains of *B. influenza* differ markedly in their agglutination reactions. Some strains were readily agglutinated by patients' sera, while others were unaffected. The serum of a rabbit inoculated with one strain agglutinated only this strain and one other out of 20 different cultures tested.

Clinical Notes : MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF CANCER OF THE CÆCUM WITH PELVIC ABSCESS AND GANGRENE OF RECTUM.

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THE following case may be of interest.

Private D., age 46, was admitted from the medical ward, Station Hospital, Lucknow, with a large sinus discharging faeces and pus about $\frac{1}{2}$ inch to right of anus and communicating with the anus. Patient had been ailing with hectic temperature and general debility and loss of weight for some weeks before reporting sick. Abdomen flaccid and nothing palpable. The only physical signs were the sinus and the marked debility.

An operation was performed on July 26th. The sinus was explored and found to lead to a large abscess cavity in the pelvis in which the lower end of the rectum was almost free, friable, and gangrenous. A large tube was inserted. The patient died some hours later. At the post-mortem examination a large soft, fungating cancer was found in the cæcum. In the pelvis was a large abscess cavity with rectum sloughing and gangrenous in it. The growth was causing no obstruction.

The explanation appears to be that the glands in front of the sacrum had suppurated and the pus tracked down the rectum, opening into it and involving it, and finally finding exit near the anus wall.

A CASE OF ECTOPIC GESTATION WITH AN APPARENTLY IMPERFORATE HYMEN.

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AN ectopic gestation is a fairly uncommon condition, and a hymen which at the time of the operation is imperforate is also rare. A combination of the two makes the case so out of the common that I consider it worth publishing.

The patient, a young woman of 28, married 6 months, was admitted on August 19th, 1918, with a history that on the 5th of that month she was taken suddenly ill with a severe attack of abdominal pain, that she soon became faint, and very pale. Her usual medical attendant was called in who ordered her to bed for a week. On August 11th she first lost blood and as she was getting worse she was sent to this hospital. She also stated that she never had any discharge per vagina, but that she used to menstruate once every 33 days. During the last two months she had not done so.

On examination she was very pale, pulse 98, temperature 99° F. There was a large swelling at the left iliac region; the abdomen was rigid and tender on palpation. The vulva appeared normal. The hymen was unruptured and very resistant, and at that time one could find with difficulty a tiny aperture permitting the entrance of a fine probe, from which a dark, tar-like fluid was exuding. The vagina was patent, for on pushing the hymen with the finger one could invaginate it and the lower end of the vagina upward like an inverted glove.

I performed laparotomy shortly afterwards. There was free blood in the peritoneal cavity and large pieces of blood-clot were surrounding an enlarged uterus, the size of a two months pregnancy. These clots were swabbed out, and the Fallopian tube (left), which was very enlarged, was found imbedded in the organised clot. The whole mass was adherent on the rectum and anteriorly in the utero-vesical pouch, which was carefully separated. From the nature of the adhesions it seems that gestation continued after the Fallopian tube was ruptured and the fetal sac ruptured later. The left ovary was also imbedded in the mass and the whole Fallopian tube, sac, clot, and ovary, were removed, and the stump firmly tied in the usual way. The patient made an uninterrupted recovery.

On Sept. 13th a plastic operation was performed on the vulva. On examination of the hymen, under anæsthetic, it was found that it formed a complete septum, completely closing the vagina without any signs of aperture or even scar! I therefore pinched it at its middle with toothed forceps and cut a small opening into it. A little tar-like fluid escaped, and with the finger it was found that the vagina was normal, and therefore the considerably thickened membrane was removed with scissors and the raw edge stitched by a continuous catgut suture leaving a normal-sized canal. The patient is now completely well and back to her domestic duties.

There is no doubt that the menstrual flow was delayed in the vagina each time until the pressure produced temporarily a little puncture through which fluid could escape, and that conception took place at one of these periods. From the condition of the hymen it is obvious that no proper sexual intercourse could have taken place, but in spite of that abnormal pregnancy occurred.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

The Management of Venereal Diseases in Egypt during the War.

A GENERAL meeting of Fellows was held on Jan. 20th, when an illustrated lecture was delivered by Sir JAMES W. BARRETT, Lieut.-Colonel, R.A.M.C., on his own experience in the management of venereal diseases in Egypt during the recent war. Sir JAMES GALLOWAY occupied the chair.

Commencing with a brief reference to the history of venereal diseases in Australia prior to the war, Sir JAMES BARRETT stated that efforts to combat these diseases began in 1896 and culminated in 1910 with an investigation made by the Government at Melbourne. The results of this were so impressive that clinics were established, an educational campaign instituted, and, probably for the first time, newspapers opened their columns to communications on the subject, couched in technical terms. Little result followed this early effort, and a committee was then formed to work out the details of prophylaxis, while pressure was brought on the leading chemists of the city to place calomel ointment on sale for this purpose. Ministers of State and ministers of religion were approached for their support, but many of the latter did not approve of the steps proposed. It was, however, arranged for a committee of clergy to be taken to the asylums to see cases of general paralysis and locomotor ataxia, to visit hospitals and clinics, and further work in this direction was contemplated when war broke out and the lecturer left for Egypt. On his way thither Sir James Barrett gave lectures to the men on the value of continence, pointing out that if determined to expose themselves to infection they must take precautionary steps. In January, 1915, venereal diseases were very prevalent in Egypt, and the military authorities were keenly anxious about the health of the troops. The troops were then occupying the Delta, and here it was that the diseases were contracted. Afterwards when the Army reached Gaza, and in 1917 when the Turkish lines were broken through, a new problem arose with the appearance of considerable numbers of new infections. The lecturer held that trouble might have been expected in the case of troops coming from a dominion where discipline was not pronounced and thrown into an Eastern country like Egypt and surrounded by every inducement to sexual intercourse, natural and unnatural. When the break-through occurred in Palestine venereal diseases were more easily kept under control, the lines of communication being then 600 or 700 miles long. Here the lecturer interpolated the remark that the military campaign was in essence a fight against malaria, an enemy which had previously arrested Mark Antony, hindered Trajan, destroyed the Crusaders, and impeded Napoleon.

The Measures Adopted and their Results.

Sir James Barrett on his arrival in Egypt was invited by General Birdwood to do anything he could for the Australian troops, who were being infected at the rate of 800 or 1000 men a day, social and moral measures alone being permitted. He visited every ship arriving in port, the men being forbidden to leave until he came on board. A leaflet of advice was handed to each man warning against the perils of native alcohol and of exposing themselves to venereal infection, and the position was fully explained to the officers without going into the question of prophylaxis. In the hospitals, on the other hand, besides enlightening literature, the men were provided with prophylactic outfits consisting of calomel ointment. On the value of prophylaxis being challenged, an examination of those Australian troops who had been supplied with outfits established the fact that out of a group of 200 men exposed to infection only one contracted disease, and he had not taken precautions. In the lecturer's experience primary prophylaxis had been practically certain in its results. But, at the same time, Sir James Barrett emphasised his view that no educational opportunity should be neglected. He showed pictures illustrating the huts and converted buildings used as social and athletic clubs for the troops in order to provide counter attractions. All this had been done in association with the Y.M.C.A., which had performed invaluable work in following the men high up to the front line and erecting huts there for their comfort and

diversion, and organising clubs. Social advantages were thus kept close to the men during the whole of their advance. During the latter half of 1915 Sir James Barrett was invalided for a time to England, and there was a period when the work was not pushed, but the result was that an intense moral and restrictive campaign, together with constructive work in the establishment of magnificent soldiers' clubs, produced a moderate amelioration and tolerable decency. But where prophylaxis was properly taught and applied venereal diseases were practically non-existent. At the end of 1915 the men returned from Gallipoli and moved to France, when infections became more numerous. The Australian troops returning from the Dardanelles in the first five months of 1916 included 10,000 with venereal infections, and at one time the average infection rate was 25 per cent. per annum. After the adoption of measures which included penal measures against unnatural offences, public indecency and pimping, the control of advertisements, the restriction of the sale of alcohol, the strict medical examination of prostitutes, the provision of ablution rooms, and the supply of prophylactics, the infection rate became reduced to very modest proportions. On the march into Palestine the moral and prophylactic campaigns were combined, and in the latter half of 1918 the disease was checked. Whilst these events were taking place throughout Egypt, at Port Said martial law was proclaimed by Lieutenant-Colonel Elgood, and prostitutes were excluded from European quarters. The women who would not leave Port Said were confined to the Arab quarter, under the Egyptian Public Health Department. An end was put to the white slave traffic discovered by the censor, and the women were examined. But soldiers still became infected from women who were reported free of disease.

Whatever the measures taken, the disease could not be stopped altogether, and so long as intercourse took place without precautions venereal diseases would necessarily result. But the value of prophylaxis emerged. In one camp through which 9282 troops passed 4500 men reported exposure to infection, and as a consequence of early preventive treatment only 13 infections resulted. The lesson taught by experience in Egypt was that all social methods combined resulted only in a limited reduction in the incidence of venereal diseases, and that unless some form of prophylaxis was adopted many infections were certain to result. From the establishment of venereal centres in this country Sir James Barrett anticipated nothing but good. The ethical side of the problem, so far as it concerned medical men, was the wholesale infection of the innocent, and Sir James Barrett could see no immorality in the prevention of venereal diseases by prophylaxis, or any value in a morality dependent upon the fear of consequences. If normal desire was to be satisfied marriage must not be postponed until the summer of life, or irregular unions would be formed. The matter, the lecturer concluded, lay largely in the hands of women; if they revised their standards of value and did not observe the existing and artificial social assessments, much of the existing sexual problem would speedily be solved.

Discussion.

Dr. OTTO MAY, who was in general agreement with the remarks of the lecturer, pointed out that at the present time we were concerned less with the actual restriction of the disease in the Army than with the evil among the civilian population. The danger of demobilisation was now generally recognised, and the Local Government Board was planning the establishment of a large number of treatment centres. He hoped that each county council and each county borough council would establish a full-time venereal clinic open day and night and every day, and that provision for early preventive treatment would be established at these clinics. In theory this solution of the problem was admirable, provided people could be induced to attend there for early treatment. In practice, however, it was a failure, for it would take almost a year before the clinics could be in working order. There was also the difficulty of providing an adequate staff. But even if every town had a clinic we should be a long way from solving the problem, because people would not go immediately after connexion for early treatment. The only reasonable alternative was to authorise the distribution of prophylactic outfits. The sale of drugs for this purpose was now illegal, save under the advice of a medical man, and Dr. May suggested that the Local Government Board or its successor,

the Ministry of Health, should make this question its own particular subject. The disease would not be wiped out altogether by the use of prophylactics, but that was no excuse for passivity, and there could be little doubt that a great diminution would follow if these steps were taken promptly.

Professor J. G. ADAMI paid a tribute to the work of Sir James Barrett, which had, he said, exerted a profound influence in America and Canada.

Sir JAMES GALLOWAY laid stress on the present difficulty of getting a complete staff for venereal clinics; there were not sufficient trained pathologists and bacteriologists available. The question of proper remuneration also demanded consideration.

Professor ADAMI suggested that non-commissioned officers of the R.A.M.C. might be employed to give instruction at the centres under the supervision of a medical man.

In replying, Sir JAMES BARRETT said that a forceful and intelligent presentation of the case to the public was necessary before it could be induced to spend money on the prevention of disease.

LONDON ASSOCIATION OF MEDICAL WOMEN.

The Future of the Medical Profession.

A MEETING of this association was held on Jan. 14th at 11, Chandos-street, Lady BARRETT, the President, in the chair.

Dr. JANE WALKER opened the discussion with a paper on "A State Medical Service," in which she referred to the need for a Ministry of Health, with the medical profession organised into a whole-time salaried service on the lines of the higher branches of the Civil Service, but admitted that there would be a transition stage with some part-time and some whole-time workers. Dr. Walker then drew attention to some of the well-known disadvantages of general practice as it is now conducted—the uncertain hours, the difficulty of making a sufficient number of visits in many cases of illness, the powerlessness of the profession in dealing with such evils as bad housing and the inroads made lately upon general practice, as in the treatment of tuberculosis and venereal diseases, and in maternity and child welfare. In a State Medical Service provision would be made for full hospital opportunity for all patients, for study leave every five to seven years, and for each medical officer to rise according to his merits and in the direction in which his talents lay. The medical profession was now too great to acquiesce in the plan whereby each man and woman competed with his neighbour; it should organise itself so as to ensure the greatest public welfare.

Dr. CHRISTINE MURRELL spoke on the position of the general practitioner in domiciliary treatment as a link between consultants, and to the advantageous position which he sometimes has over the medical officer of health in dealing with such evils as slum property. She referred to the conduct of American clinics on a collective system, in which treatment was open to all, with payments according to means, and assessed by almoners.

Dr. JESSIE CAMPBELL spoke on methods by which the standard of work in general practice might be raised. She advocated part-time appointments for such work as infant welfare, school treatment centres, and the treatment of tuberculosis and venereal disease. This would keep the general practitioner more up-to-date than attending post-graduate courses.

Dr. DOROTHY HARE said that the standard of work in general practice dropped because practitioners worked alone, and so lost mental stimulus, and that they found it difficult to try new treatment owing to want of moral support such as they would have in a hospital.

An interesting discussion ensued in which the following took part: Dr. RUTH BENSUSAN-BUTT, Dr. DICKENSON BERRY, Dr. M. COCKERELL, Dr. O. LEWIN, Dr. MEAKIN HERFORD, Dr. L. FAIRFIELD, and Lady BARRETT.

At the last meeting of the Edinburgh University Court, Dr. Dawson Turner was appointed additional examiner in medical physics.

LITERARY INTELLIGENCE.—P. Blakiston's Son and Co., Philadelphia, announce a second and revised edition of the American Red Cross Text-book on First Aid, by Colonel Charles Lynch, U.S.M.C.

Reviews and Notices of Books.

The Soldier's Heart and the Effort Syndrome. By THOMAS LEWIS, M.D. Lond. London: Shaw and Sons. 1918. Pp. 144. 7s. 6d.

INTO this small book Dr. Lewis has packed much information. As is his wont, he writes only of those things he has himself found to be true, and he sets these down in a well-knit form easy to apprehend. His experience of cardiac disabilities in soldiers is probably unrivalled, and this book is therefore one which no one handling these problems can afford to do without. It is written especially to help members of invaliding and pensions boards, and this purpose is admirably fulfilled.

Dr. Lewis's main thesis is that the "soldier's heart" syndrome is made up of the same subjective and objective components as follow strenuous exercise in healthy men. In the exhausted soldier, however, the point of cardiac distress is much more easily reached. For its causation this exhaustion depends on several factors, some inherent, some acquired. It is to be detected mainly by testing the man with physical exercises. These, if graduated, constitute a means of prognosis as well as of treatment. They are also applicable to the recruiting problem. These arguments, with tabulated results of the treatment based thereon, and much sound advice as to the discernment of organic heart disease, constitute the bulk of the book. It appears at an opportune moment, for one of the great tasks which the Pensions Medical Service (if and when we have one) must tackle is that of assessing fairly the claims of the man with a cardiac disorder or lesion. The book is clearly printed, and can be read in two or three evenings.

LIBRARY TABLE.

Kala-azar, its Diagnosis and Treatment. By ERNEST MUIR, M.D. Edin., F.R.C.S. Edin. London and Calcutta: Butterworth and Co. 1918. Pp. 38. Rs. 2.—This little book is introduced by Sir Leonard Rogers, and is written with the object of supplying to the medical practitioners in small towns and villages in India a guide to the diagnosis and treatment of this very prevalent disease. Until lately kala-azar was almost always fatal, but Dr. Muir considers that if the condition be treated by the intravenous injection of soluble antimony salts, as advocated by Sir Leonard Rogers, "recovery may be expected in almost all cases where the treatment is begun in time and carried out efficiently." Having considered the question of diagnosis, the author describes his method of treatment, which he divides into four divisions: (1) the production of leucocytosis by the intramuscular injection of turpentine, camphor, creosote, and olive oil; (2) the destruction of parasites by antimony salts; (3) the treatment of complications; and (4) general tonic treatment. The work should be useful to those who are actively engaged in dealing with kala-azar, as the technique of various operations, such as spleen puncture and the intravenous injection of antimony, are described in detail.

At Home in the War. By G. S. STREET. London: Heinemann. 3s. 6d.—The normal psychological attitude displayed towards the war, as it went on, by middle-aged men averagely endowed for comprehension and sympathy is probably a fair definition of the thing which Mr. Street was trying to express in this little book. He has been misled by his modesty if he thinks that his description of such an attitude represents the average man's ability. Such remarks as this: "It is a universal foible of humanity to exaggerate the work of what you know and another man does not know; the vanity of special knowledge is seen everywhere"; or the analysis of the anti-national spirit in the paper entitled "Our Intellectuals," are in their neat and terse manner expressions of what most of us would be proud to say half as well. The "Revanche" for middle age, in the paper called "The War and Age," is a specimen of the author's pleasant humour. On page after page one finds set out with lightness and charm some thoughts of which most middle-aged men at home have been conscious without being able to define them. Mr. Street holds up to many of us a mirror from which the haze obscuring our real thoughts has been skilfully wiped away. Many quite conscious of an imperfect realisation of

what is really being thought will value the little book and feel thankful and friendly towards its author. In a somewhat different vein to most of the book is an "essay in little," called "The War and Kensington Gardens," which Mr. Street says should have been really a sonnet or sonnet sequence. It would be pleasant if the author would try his hand in that mode; he has not only the deftness and delicacy but also the power which make up the true sonneteer.

A Health Reader for Girls. By AGNES L. STENHOUSE and E. STENHOUSE, B.Sc. Lond. London: Macmillan and Co., Limited. 1918. Pp. 190. 3s.—This is an excellent little book in which the subject of health is dealt with in the simplest language. The body is first described, after which an account is given of food, digestion, care of the teeth and cleanliness, clothing, breathing, ventilation, the blood, the nervous system, and special senses. The only chapter to which we take exception is that on the Food of Babies. Milk is not necessarily sterile after being stood in a pan of boiling water for a quarter of an hour. The information given on preparing the baby's food, on the amounts which should be given, and on the times of feeding is long out of date. No special dilution and no definite amount of food is now given to a baby of a certain age, and, though these instructions may be useful in helping to prevent disasters, it is a mistake to put a hard-and-fast rule on record in a book which may be referred to in the home, or to give a mother the idea that her baby can be fed by any rule-of-thumb method. Babies' digestions, like babies themselves, are not all made on one pattern.

New Inventions.

A "DROPPED-FOOT" APPLIANCE.

We have received from Mr. Frank Jenner, surgical boot-maker, Christchurch-road, Boscombe, an appliance intended to enable the sufferer from "dropped foot" to walk with ease and comfort. It consists of an iron framework formed of two sickle-shaped arms joined together at the straight ends by a short transverse bar passing under the sole of the boot and close to the heel, to which it is affixed by a flat broad hook. The straight parts of the sickle-shaped sides pass upwards towards the ankles, the bend in



the sickle allowing for the protrusion of the malleoli. The framework is kept rigid and in place by a strap passing round the back of the boot. The free ends of the framework are joined to the front part of the boot by spiral springs at points at either side of and at a level with the bottom of the

laced opening. These springs can be adjusted so as to correct any tendency to inversion of the foot or the opposite, and the whole apparatus can be adapted to any sized boot. The appliance, which costs 15s., is ingenious and may prove useful in practice—we are informed that it has been used with satisfaction at the Boscombe Military Hospital—but it seems to us that the upper portion of the lever is too short, consisting as it does only of the part corresponding to the last inch of the tibia and that the pressure of the strap over the tendo Achillis can hardly fail to be excessive if the device is to keep the toe from dropping. The hooks, too, by which the springs are connected with the boot do not seem very well adapted for hard wear. These criticisms, if in practice they are found to be just, can be readily met.

THE LANCET.

LONDON: SATURDAY, JANUARY 25, 1919.

The Psychopathic Criminal.

AMONGST the problems to which the war has given a new aspect and an added urgency the treatment of the mentally defective and unstable criminal is one of considerable importance. Large numbers of men will be returning to this country or will be coming out of the military hospitals while still suffering in some degree from mental and nervous disabilities brought about by the unexampled stresses of modern warfare. It may be anticipated with a fair measure of assurance that in many cases the mental enfeeblement of these invalids will be manifested by disorders of conduct of more or less gravity, bringing them into conflict with the law; and several instances of this kind have, in fact, come before the criminal courts within the last few weeks. Public opinion will not tolerate the treatment of these war victims by the indiscriminate methods which have been applied to the general mass of law-breakers. The demand will certainly be made that in every such case full consideration should be given to the mental condition of the offender, and that he shall be dealt with on curative lines adapted to his individual needs, and not merely by the stereotyped punitive and repressive measures which up to the present have been the sole resource of the law. To satisfy this demand, which can obviously be urged with no less force in regard to other categories of psychopathic delinquents, it will be necessary to introduce an entirely new spirit into the system of procedure in criminal cases and to recognise to a far greater extent than in the past the importance of the help which the expert in morbid psychology can give in the administration of justice.

A proof of public opinion in this direction is supplied by the proposals in a report which was submitted to a meeting of the justices of the City of Birmingham on Jan. 2nd of this year by their General Purposes Committee. This report, presented by Mr. GERALD BEESLY, deputy chairman of the justices, voices the dissatisfaction which has been felt by the Birmingham magistrates—a dissatisfaction which has doubtless been shared by magistrates in other parts of the country as well—at being compelled to deal with criminal cases without having any regular facilities for obtaining expert advice touching the mental condition of the offenders, and without adequate means of giving effect to such advice even if it were obtainable. In the opinion of the committee, this deficiency in the legal machinery has been an important factor in the relative failure of the existing penal system as a reforming agency and as a preventive of recidivism. With a view to organising a more satisfactory method of treatment the committee have put forward a number of

valuable suggestions, which they divide into two categories—those which are immediately practicable, and those which can only be carried out by special legislation. Of the proposals under the former heading the most important is the recommendation that a physician with expert knowledge of psychiatry should be attached to the court, with whom the justices can confer and take counsel in any particular case. It is interesting to note, as bearing on this suggestion, that a similar system was introduced in 1914 at the instance of Chief Justice HARRY OLSON, in connexion with the Municipal Court of Chicago. Here a psychopathic laboratory was instituted under the direction of Dr. W. J. HICKSON, for the examination of accused persons presenting indications suggestive of mental abnormality; and according to the recent reports of the Court (Tenth and Eleventh Annual Reports of the Municipal Court of Chicago) the results obtained have been such as to convince the judicial authorities of the practical utility of psychiatric assistance, not only in deciding as to the treatment of offenders but also, in many cases, in assessing the reliability of witnesses. It is difficult to think of Chicago as a field for the propagation of academic theories and doctrinaire views; and the fact that the authorities of this typically business centre have been moved by scientific psychology to consider the proper treatment of the criminal justifies the attachment of considerable weight to such testimony to the value of psychiatry in the administration of the law. The example of Chicago should encourage the citizens of Birmingham to carry out the interesting experiment which they have projected. They will, of course, be impeded in this enterprise by the fact that, in the present state of the law, only very limited means exist for applying differential treatment to the various categories of mentally defective and unstable offenders; but the accumulation of definite data regarding the relation of mental abnormality to crime, which this scheme should provide within a short time, will in itself be of considerable value in educating public opinion, and will do much to further the adoption of the legislative reforms which they advocate.

These reforms are set out in Mr. BEESLY's report as follows:—

1. The provision of "places of detention" for observation of cases of mental instability, instead of prison on remand.
2. The provision of farm colonies and the like for cases which cannot be dealt with under the Lunacy or Mental Deficiency Acts, instead of prison.
3. The establishment of a consultative clinic, associated with the administration of justice, with expert medical practitioner and lady superintendent in charge, for voluntary treatment of cases where some form of mental weakness is exhibited, and to which the friends or relations of the person affected might appeal for help and guidance.
4. The clinic might also: (a) Assist in determining how far more or less recidivist criminals submitted for examination by the police are fit to be at large; (b) examine persons suffering from "borderland insanity," whether submitted by public authorities or by their relatives, prescribing (or certifying) appropriate treatment where mental instability is established; (c) deal with feeble-minded women and girls who have borne illegitimate children, or have become infected with venereal disease.
5. Amendment of the Mental Deficiency Act, 1913, especially by extending its operation to cases of mental debility other than those existing "from birth or from an early age."

These proposals should find general acceptance as indicating the principles to be kept in view in reforming our present methods of dealing with mental weakness which leads to anti-social conduct. Such modification as they may need in detail will

be more clearly perceived when the immediate action contemplated by the Birmingham magistrates has given a more accurate and more comprehensive view than we have yet obtained of the nature and dimensions of the problem. It will then be possible to decide, for instance, whether such a psychopathic clinic as suggested in the Birmingham scheme should be primarily associated with the administration of the criminal law, or whether it might not be preferable to institute it in connexion with a general hospital, or with an out-patient department attached to an asylum for the insane. On this and on other points the decision ultimately arrived at will, no doubt, be determined very largely by the extent and character of the reforms in lunacy administration which will inevitably form part of the coming reconstruction of the health services of the nation, and which are urgently needed to bring psychiatry into closer touch with other branches of medicine. Meanwhile we may cordially congratulate Mr. BEESLY and his coadjutors on their initiation of an experiment which, in addition to its immediate practical results, should do much to stimulate the public demand for a wider application of scientific methods in dealing with the problem of criminality.

The Rôle of the Catalyst.

THE catalyst is assuming an importance no less in medicine than in industries. Chemists long ago found out the peculiar action of a third party in promoting chemical interaction. The classic example is that of the preparation of oxygen gas from chlorate of potassium. The fused mass of the salt, with heat still applied to it, yields its oxygen reluctantly, but at that point it is dangerous to introduce a trace of manganese dioxide since at once the evolution of oxygen becomes explosive though the manganese remains unchanged. An earlier example of catalysis was the Döbereiner lamp, in which spongy platinum was the catalyst effecting the union of a mixture of hydrogen and oxygen at such a speed that ignition was the result. The most remarkable catalyst of all is water, without which, it has been shown, combustion or oxidation is impossible. Similarly the louse is a catalyst in respect of man and trench fever. Catalysts, briefly, are promoters of chemical action for reasons not yet fully explained. They may function equally in the relatively cold or under conditions of high temperature. The remarkable behaviour of catalysts in the human body at its normal temperature illustrates the importance of their action in promoting healthy nutrition, which after all means the complete chemical assimilation of food substances.

We have much yet to learn as to the nature of the action of the accessory factors in food—for convenience called *vitamines*—which serve as anti-neuritic and antiscorbutic agents. It is conceivable that in the chemical sense they act as catalysts—that is, as a third party, rendering the potentialities of food available for the maintenance and growth of the organism. It is known, at all events, that they occur in quite minute proportions, in spite of which they prove to be essential to growth. When we consider the very remarkable results produced in great industrial processes by the agency of the merest trace of a third party, the catalyst, our views are strengthened as to the importance of a certain factor present in however minute quantity. There is good reason for suggesting that

the *vitamines* are catalysts just as are the enzymes, whose action in many respects resembles that of inorganic catalysts, particularly in the colloidal state. Dr. G. G. HENDERSON, in a recent valuable treatise on *Catalysis in Industrial Chemistry*,¹ says that the term "catalysis" is now generally used to designate those chemical changes of which the progress is modified by the presence of a foreign substance, and he further points out that it has for long been known that the velocity of many chemical reactions which take place very slowly if the reacting substances alone are present in the system is greatly increased by the addition of certain substances, which have the same composition after the change has been completed as at the beginning, and which therefore appear to influence the course of the reaction without taking any definite stoicheiometric part. This definition would appear to include all accessory food factors as catalysts, having no direct nutritive value themselves, but serving as promoters of a nutrient consummation.

The application of catalysts in industrial operations is growing very rapidly in importance, and the behaviour in many respects of the catalysts employed shows a curious parallel to well-known physiological phenomena. Traces of arsenic, mercury, sulphur, hydrocyanic acid, "poison" in so many cases the catalysts' activities, and there are also negative catalysts which inhibit the action of positive catalysts not by "poisoning" them but by neutralising their potentialities as acid does an alkali. Sir EDWARD THORPE, writing in his introduction to the excellent "Monographs on Industrial Chemistry" now being issued, says an obscure phenomenon like catalysis is found to be capable of widespread application in manufacturing operations of the most diverse character. The phenomenon may be obscure, but its applications are suggesting great possibilities in arts and industries which are bound to have an important bearing on the commercial prosperity of this country. The catalyst, in short, promises to open a way to important economic productions, as witness the hardening of liquid fats for food purposes, the production of fertilisers from the air, and the output of many valuable commercial products. The advances made and the vista opened up by the study of catalytic action, though confined largely to industrial processes, should persuade biologists, as well as biological chemists—we see no dividing line between these two schools of workers—to accept a cue which, followed, may lead to results in the study of life processes of immeasurable importance. The part played by conceivably a catalyst in human nutrition may, when thoroughly investigated, enable us to adopt a regimen which will secure for certain patients a dietary in which the supply of accessory factors is well represented. It is a matter of history that industrial developments have been shown to give a helping hand to medicine—the coal-gas industry with its output of antiseptics, synthetics, and colours, the brewing and wine industries which formed the basis of PASTEUR'S successful researches are cases in point. The prominent place which the catalyst is rapidly taking in industrial advances will shed a light on the chemistry of the human mechanism, its liabilities, and the factors which count in its healthy maintenance.

¹ *Catalysis in Industrial Chemistry*, by G. G. Henderson, M.A., D.Sc., LL.D., F.R.S. Longmans, Green, and Co., London, 1919, pp. 202, price 3s.

The Outlook of the Medical Practitioner.

WE publish this week a personal retrospect by Dr. JAMES PEARSE of his experiences, extending over some 20 years, of general practice, and from his sternly modest remarks there can be gathered not so much what the past has been as what the future should be. Dr. PEARSE reviews the advantages and disabilities, the privileges and drawbacks, of general practice as it existed for the mass of general practitioners before the war, and also before the passage of the National Insurance Acts brought in a system of panel practice. He would be the first to allow that there is not much in his résumé either of the difficulties of general practice or of its compensations that has not been said before, either explicitly or by inference, but we publish the essay with pleasure because it is a practical account of things as they have happened, containing at the same time large suggestions for their improvement. It not only indicates what ought to be altered, but lays stress upon what ought to be preserved. It is really a story of progress, for undoubtedly the medical student of to-day starts with a far finer equipment than the medical student of 30 years ago. Not only is his general standard of knowledge much higher, but the science upon which that knowledge is founded is more thorough, and the general principles of biology, chemistry, and physics replace in his education the rule-of-thumb tenets of the older medical schools.

But by as much as the man who now enters medical practice does so with a wider outlook than the commencing practitioner of 30 years ago, by so much does he feel the need for a continuance of his studies and of the introduction of scientific method into his professional life. It is true that the young medical practitioner of to-day, as of 20 or 30 years ago, must gain his knowledge largely from his own experience and from the exercise of his own judgment; he feels strongly, however, that he should not be called upon to alleviate the ills of the public in accordance with a set of dogmatic precepts, for he is really playing his part in a great preventive and curative scheme founded on scientific principles. And therefore he realises that he ought to be in close touch with his colleagues similarly engaged. He is aware that he should have proper opportunity to revise his knowledge by mutual counsel and to secure for his patients special consultative advice in directions where his scientific information indicates the particular treatment needed. Regarded in this way Dr. PEARSE's retrospect is a forcible argument for much of that decentralisation of medical skill and knowledge which most of the schemes for a Ministry of Health postulate. When there is a central controlling authority of medicine, and when it is perceived that all medicine should be preventive in its inclusive object, the wastefulness and cruelty of leaving the general practitioner in his present isolated position will be apparent. The original foundation of panel practice contemplated the formation of local centres of scientific medicine, to serve as rallying points for general practitioners, constituting a liaison between routine medical practice and special or laboratory development. More ambitious schemes have been published expanding this idea, and, read as a message for the future rather than a record of the past, Dr. PEARSE's essay is a demand for movement along the same lines.

Annotations.

"No quid nimis."

THE VACCINES AND SERUMS SUPPLIED TO THE ROYAL NAVY.

PREVIOUS to 1916 the greater part of the vaccines required were received from the inoculation department of St. Mary's Hospital, through the courtesy of Sir Almroth Wright. Surgeon Captain P. W. Bassett-Smith, C.B., C.M.G., R.N., informs us that since then the undernoted quantities have been prepared in the laboratories of the Royal Naval Medical School, Greenwich, by the naval staff, assisted by a civil bacteriologist, who joined for the war from Armstrong College, Newcastle:—

Typhoid vaccine, 5400 c.cm.
 Paratyphoid vaccine, 21,500 c.cm.
 Triple typhoid vaccine (Naval formula), 247,700 c.cm. The triple vaccine is a mixture of *B. typhosus*, *paratyphosus A*, and *paratyphosus B* heated to 55° C. for half an hour; 0.5 per cent. phenol is then added.
 Cholera vaccine, 8600 c.cm. (Prepared from several strains of Balkan origin.)
 Antisepsis vaccine, 48,400 c.cm. (A mixed polyvalent vaccine containing streptococci and staphylococci.)
 Influenza vaccine, 144,000 c.cm. (A mixed polyvalent vaccine containing *B. influenza*, streptococci, and pneumococci.)
 Melitensis vaccine, 1380 c.cm.
 Staphylococcal vaccine, 910 c.cm.
 All antitoxins and serum prepared elsewhere were issued to the various divisions, depôts, and ships from the school.
 Tetanus antitoxin, 14,800 doses.
 Diphtheria antitoxin, 2400 doses.
 Antidysentery serum, 2800 doses.
 Antistreptococcal serum, 1250 doses.
 Antimeningococcal serum, 5000 doses (and other sera and vaccines in smaller quantities).

During 1917 and 1918, 30,900 c.cm. of triple typhoid vaccine was prepared at the R.N. Hospital, Malta, and distributed locally to the Fleet in the Mediterranean.

Surgeon Captain Bassett-Smith has further supplied us with the following significant and valuable information in respect of antityphoid vaccines used in the Royal Navy and the incidence of cases:—

1914-1915. (Simple Typhoid Vaccine.)

| No. of men. | Inoculated once. | Inoculated twice. |
|-------------|------------------|-------------------|
| 23,448 | 1869 | 21,579 |

The differentiation of cases was not sufficiently accurate for summary, but out of the 372 reported there were among the inoculated 3 deaths and among the uninoculated 22 deaths.

1915-1916. (Simple Typhoid and Triple Typhoid Vaccine.)

| No. of men. | Inoculated once. | Inoculated twice. |
|-------------|------------------|-------------------|
| 20,663 | 1967 | 18,696 |

(12,000 were simple typhoid vaccine only.)

Total cases of enterics, 295:

| | Typh. id. | Paratyphoid A. | Paratyphoid B. |
|----------------------|-----------|----------------|----------------|
| Not inoculated ... | 24 % | 10.2 % | 11.0 % |
| Inoculated once ... | 14 % | 7.8 % | 7.8 % |
| Inoculated twice ... | 10 % | 7.4 % | 11.0 % |

(For percentage of these types see Haslar statistics.)

1916-1917. (Triple Typhoid Vaccine.)

| No. of men. | Inoculated once. | Inoculated twice. |
|-------------|------------------|-------------------|
| 21,695 | 1578 | 20,117 |

Total cases of enterics, 144, comprising 93 typhoid, 21 para. A, 30 para. B:

| | Typhoid. | Paratyphoid A. | Paratyphoid B. |
|----------------------|----------|----------------|----------------|
| Inoculated once ... | 6 | 3 | 1 |
| Inoculated twice ... | 13 | 9 | 12 |
| Not inoculated ... | 74 | 9 | 17 |

Deaths.

| | | | |
|--------------------|---|---|---|
| Not inoculated ... | 3 | 1 | 0 |
|--------------------|---|---|---|

No deaths among those inoculated.

Of the 13 typhoid cases inoculated twice, in 11 over 12 months had elapsed.

Of the 9 para. A inoculated twice, 3 had received simple

typhoid vaccine only, and in 3 over 12 months had passed since inoculation.

Of the 12 para. B inoculated twice, 2 were inoculated with the simple vaccine only.

1917-1918 (*Triple Typhoid Vaccines.*)

| No. of men. | Inoculated once. | Inoculated twice. |
|-------------|------------------|-------------------|
| 20,910 | 1486 | 19,424 |

Total cases of enterics, 96, comprising 79 typhoid, 6 para. A, and 11 para. B:

| | Typhoid. | Paratyphoid A. | Paratyphoid B. |
|---------------------|----------|----------------|----------------|
| Inoculated once ... | 6 | — | 2 |
| Inoculated twice... | 12 | 2 | 2 |
| Not inoculated ... | 61 | 4 | 7 |
| <i>Deaths.</i> | | | |
| Inoculated twice... | 1 | — | — |
| Not inoculated ... | 5 | 1 | — |

Of the 12 typhoid cases who had been inoculated twice, in 9 of them over two years had elapsed since being last inoculated, but in one the period was only 10 months, and this case was fatal. Of the two para. A, one had been inoculated six months before and one a little over a year, showing comparatively slight protection from this form of the disease. Of the two para. B, in both the cases the inoculations had been given over two years previously. The results show that the protection for typhoid and para. B is good, but at least two inoculations are required, and that reinoculations should be made not later than 18 months.

THE SPECIAL CLINICAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

THE customary annual meeting of the British Medical Association has not been held during the last four years. That meeting was formerly arranged with domestic and general subdivisions; the domestic consisting of the meetings of the Council and of the Representatives, and dealing with the internal work of the Association, the general consisting of the sections prepared to discuss the clinical and scientific work of the year. During the war the sectional debates on the various branches of professional learning have not been held, as so many prominent exponents of medicine were engaged on the medical work of the Navy, Army, or Air Force, when the annual meeting resolved itself into meetings of the Council and of Representatives. At the annual general meeting at Aberdeen just prior to the war it was arranged that an annual general meeting, presumably of the usual type and scope, should take place in the following summer in Cambridge under the presidency of Sir Clifford Allbutt, but as that date approached it became clear that no adequate meeting could be held. The University had become practically a large training camp for staff officers as well as cadets, and was so denuded of all accommodation that the hospitality of its walls could no longer be proffered. Moreover, by this time all men began to see that the end of the war was far away. The question of the next annual general meeting of the Association has been held under consideration ever since, only the domestic gatherings being held. And, now that hostilities are suspended, the position of strain in the medical profession has been so little relieved that it has been thought wise to attempt no regular annual general meeting until 1920, in which year, however, Sir Clifford Allbutt has announced that the University is looking forward to entertaining the Association. In the circumstances it has been decided that a special meeting should be held this year for the discussion of clinical and scientific subjects, but on a smaller scale as to sections than has marked

previous annual meetings. This special general meeting will take place early in April, and last for two, or perhaps three, days. A general committee has been appointed for its promotion, together with two sub-committees, one taking over the organisation and the other dealing in detail with the programme of scientific work. The decision is an expression on the part of the Association that the time has come to relay old tracks and to make plans for reconstruction, even though no attempts at a comprehensive scheme can yet be entered upon. The meeting will be held in London and its main object will be to bring together British workers and visitors from the Dominions and the United States. There will be no large disengagement from their duties before April either of our Colonial or our American colleagues, so that an exceptionally strong medical voice ought to be obtained on many subjects from a series of officers who have studied war medicine and war surgery on many spots and from many points of view. Colonel A. M. Whaley, speaking as United States liaison medical officer with the War Office, has given a warm welcome to the proposal, which has also received the support of Colonel J. G. Adami, Professor of Pathology at the McGill University, Montreal, and Colonel R. D. Rudolf, speaking for Canada, and of Colonel C. T. M. De Crespigny and Colonel Bernard Myers, speaking respectively for the Australian and New Zealand Army Medical Services. Hearty acceptance of the proposal has also been received from Sir William Norman, Medical Director-General of the Navy, Sir John Goodwin, Director-General of the Army Medical Service, and Colonel T. D. Barry, representing the medical administration of the Royal Air Force. If the scheme of the meeting is well drawn up, and precautions are taken only to admit authoritative communications, the net result for good ought to be very great. But those who draft the programme of scientific work will have to be tactful and firm, for the time at the disposal of the meeting will not allow for much duplication of opinion, or any desultory discussion of the admitted and the obvious. First-hand and new experiences will have to be given all possible opportunity for expression.

PUBLIC HEALTH WORK IN EGYPT.

WE were permitted to publish in THE LANCET some weeks ago the substance of the report of a Commission appointed in the summer of 1917 by the High Commissioner to advise as regards the future organisation and work of the Egyptian Department of Public Health. The Commission was composed of Lieutenant-Colonel Andrew Balfour, Lieutenant-Colonel G. E. F. Stammers, Mr. E. S. Crispin, director of the Medical Department for the Sudan Government, and Dr. Charles Todd, director of the laboratories in the Department of Public Health, Mr. H. Sheridan acting as secretary. It was referred to the Commission to consider the present organisation and duties of the Public Health Department and its relations with other Government Departments, and to make proposals for increasing the efficiency of the Public Health Department. In these circumstances the Commission was authorised to call for all necessary evidence, and was given access to pertinent documents and records.¹ The report is now published by the Cairo Government Press, and we trust that its highly valuable and practical recommendations will shortly be acted upon.

¹ See THE LANCET, Nov. 23rd, 1918, p. 715.

THE STORY OF LETHARGIC ENCEPHALITIS.

THE report on Encephalitis Lethargica, issued under the title of an Enquiry into an Obscure Disease, by the Local Government Board (New Series, No. 121), may justly be claimed as a brilliant vindication of the application of team-work in the elucidation of a medical problem. Attention was drawn to the appearance of the new syndrome by Dr. Wilfred Harris in the columns of THE LANCET on April 20th, 1918. The similarity between some of the symptoms and those which characterise infection caused by food contaminated with the *Bacillus botulinus* created a general anxiety which was natural in the circumstances of the time. A preliminary inquiry was started at once to determine whether food contamination could be held responsible for the outbreak. The result of this inquiry was entirely negative; no direct or indirect evidence of an association of the illness with infection from food was obtained. On the other hand, certain features, particularly the pathological examinations, raised the suspicion that the outbreak might be one of epidemic anterior poliomyelitis, or Heine-Medin disease. With a view to determining the correctness or otherwise of this suggestion the present inquiry was instituted on a comprehensive scale. The results of the well-coordinated investigation—clinical, epidemiological, pathological, and bacteriological—are contained in this report, and the conclusion arrived at is briefly that the disease is identical with that described by Von Economo in Austria and Professor Netter in France, that it is *sui generis* and distinct, both anatomically and clinically, from analogous affections—e.g., acute poliomyelitis. It belongs to the class of polio-encephalitic diseases which are inflammatory in nature, but the inquiry has not yielded any conclusive evidence as to the character of the causal agent. When it is considered that the organism which causes the analogous disease poliomyelitis is still a matter for debate, although thousands of cases have been investigated from the bacteriological point of view, it is not surprising that the problem of the causal agent of encephalitis lethargica is as yet unsolved. Sir Arthur Newsholme in his introductory review says:—

"Although a negative finding is unsatisfactory, and affords little basis for preventative action, the speedy cessation of the outbreak makes it necessary, for the present, to leave the problem at this point. Possibly a larger number of cases hereafter may supply material for further epidemiological and bacteriological research and animal experiment."

Dr. A. S. McNalty, who carried out the clinical part of the work, makes the arresting suggestion that the relation between acute poliomyelitis and lethargic encephalitis may be comparable to that between typhoid and paratyphoid. He also lays stress on the influence which diminution of resistance in individuals may have on the "evolution" of a disease. The virus may well have been fairly generally present in the human organism and the strain of the years of war may have so altered the resisting powers of certain individuals that an ordinarily saprophytic organism had become pathogenic for them. Such a suggestion is made more probable when the widespread sporadic distribution of the cases in the recent epidemic is considered, and this point is very clearly brought out by Colonel S. P. James in his epidemiological survey of the outbreak.¹ Patho-

logical investigations were carried out by Professor Marinesco, whose services were most fortunately secured through the Medical Research Committee, and by Dr. James McIntosh. Both emphasise the similarity between the lesions found and those of poliomyelitis—namely, cellular infiltration around the smaller veins in the basal ganglia, the upper part of the pons, particularly in the grey matter of the floor of the fourth ventricle, and to a much less degree in the medulla. Both failed to find satisfactory evidence of the presence of a specific micro-organism, and the intracerebral inoculation of monkeys with emulsion of diseased tissues carried out by Dr. McIntosh was void of result. The only striking pathological difference was one of localisation. Yet here combined work supplied the corrective. The masterly analysis of the clinical differences set forth by Dr. McNalty, supported as it is by the epidemiological evidence, leaves no reasonable doubt that the two diseases are separate entities. Sir Arthur Newsholme and his coadjutors are to be congratulated upon this report as an instance of what can be achieved by orderly scientific investigation.

NATIONAL REGISTER OF POPULATION.

AT a meeting on Jan. 6th of the Commission for the Reconstruction of the National Birth-rate an urgent appeal was made on behalf of the Registrar-General by Dr. T. H. C. Stevenson for the establishment of a national register of population, which should supersede the many partial registers in present use. The list already includes, in addition to the national and electoral registers, the school attendance and food registers, and those relating to sickness, unemployment, insurance, and some others. Sir Bernard Mallet, in full accord with his predecessors, lay as well as medical, at the General Register Office, once again revives the official demand for a complete registration system on the ground that the Census, which is the only complete register, is revised not more frequently than once in ten years. It therefore rapidly becomes out of date, and is of little value except for statistical purposes. Practically all the registers now in vogue are independently compiled and maintained, the information contained in each one being seldom available for the purposes of the others. The Registrar-General accordingly proposes that a single master register should be inaugurated which should include every man, woman, and child in the country, giving particulars of name, address, sex, age, occupation, and date of birth, together with information as to marriage and family. But inasmuch as no single register could possibly contain all needful information, it is proposed to link up each unit with the general register as part of a co-ordinated system, providing for the communication to each of the special registers of the information of common interest collected by the general register, and leaving each of them to amplify this according to individual requirements. For this purpose the general register might record, in code form, the necessary particulars, and information respecting removals could be communicated to the local branches as required. As this register would deal with many millions of names it would have to be arranged in local sections throughout the country. Nevertheless, it would be necessary to maintain at headquarters an index to the local registers everywhere. To this

¹ THE LANCET, 1918, II., 837.

central index all births, deaths, and removals would of course be referred, but it is essential that all local registers should be controlled and coördinated by the central organisation.

With the object of allaying the fears already expressed that the present proposal would result in the exaction of family secrets to which objection might be taken, Dr. Stevenson was able to assure his hearers that the new proposals did not increase in any way the statutory information hitherto demanded from the public. It only altered the form in which it would be required. The Commission resolved—

"That in the view of the National Birth-rate Commission there is immediate need for the improvement of the vital statistics upon which all its conclusions must be based by the formation of a joint register on the lines advocated by the Registrar-General."

The meeting was presided over by the Bishop of Birmingham on behalf of the National Council of Public Morals. The apparently imminent establishment of a Ministry of Health, and the appointment of Dr. Addison and Sir Auckland Geddes as heads of the departments concerned, would indicate the present moment as judiciously chosen for the presentation of the Registrar-General's request. This seems to us reasonable and necessary for the discharge of the additional responsibilities which the establishment of a Health Ministry would entail on his department, and for the fulfilment of which a complete system of registration would be indispensable.

THE EUROPEAN FOOD SITUATION.

WE have received from the Provisional Committee on the European Food Situation (77, Avenue Chambers, London, W.C. 1) a letter signed by Lord Parmoor intended to bring the facts of the European famine, due to the continuance of the food blockage, before the medical profession and to obtain their opinion upon its probable results. The facts are substantiated as regards Vienna by a translation of an article published on Dec. 27th in the *Arbeiter Zeitung* by the vice-burgomaster of the city, and of the statistical material laid before the Inter-Allied Commission by the burgomaster of Vienna. The percentage of deaths attributed with certainty to malnutrition is given as 7 per cent. or over for each month since last July, and there is a presumption that the actual proportion is more than double that figure.

DURING the fourth quarter of 1918 98,998 deaths from influenza were registered in England and Wales; this number, though given officially, is provisional.

At a general meeting of Fellows of the Royal Society of Medicine, held on Jan. 14th, the conditions were discussed under which pensioners should be admissible to treatment in civil hospitals. We have been obliged to hold over a detailed report of this important discussion until our next issue.—The Council of the Society has decided to have a social-scientific evening once a week for the reception of officers attached to the R.A.M.C. and Red Cross, and officers of the Medical Services of the Dominions, the United States, and other Allied Powers. The reception will be held every Wednesday evening at 8.30, when a short informal discourse will be given, after which it will be free to any present to raise and discuss any question in which they are interested. The first discourse will be

given on Wednesday, Feb. 5th, at 8.30 P.M., when Sir John Bland-Sutton will discourse on Gizzards and Counterfeit Gizzards, illustrated by specimens.

Sir Arthur Newsholme's impending retirement from the medical officership of the Local Government Board is announced. The good wishes of the Public Health Service, which he has served so well, go with him.

A COURSE of four lectures on Malaria will be delivered at noon on Jan. 31st, and Feb. 7th, 14th, and 21st, in the Lecture Theatre of the Medical School, King's College Hospital, by Colonel Sir Ronald Ross. Officers and men of the R.A.M.C. are invited to attend. Microscope specimens and lantern slides will be shown at the two last lectures.

THE Council of the National Medical Union decided in December last to invite a mass meeting of the medical profession to consider the establishment of a medical advisory body in connexion with the proposed Ministry of Health. This meeting, which will be open to panel as well as to non-panel practitioners, will be held at the Wigmore Hall, London, W., on Sunday, Feb. 2nd, at 4 P.M.

A special meeting of the Faculty of Insurance will be held on Tuesday next, Jan. 28th, at 7 P.M., at the Central Hall, Westminster, when an address will be delivered by Mr. E. B. Turner (chairman of the Medical Committee for Combating with Venereal Disease) on Venereal Disease considered as an Urgent Health Problem. Mr. P. Rockliff (President of the Faculty) will initiate a discussion on Prophylactic Treatment.

AT the meeting of the Medical Society of London to be held on Monday next, Jan. 27th, at 8.30 P.M., a discussion will take place on "The Modern Treatment of Gonorrhoea of the Genito-Urinary Organs." The debate will be introduced by Colonel L. W. Harrison, R.A.M.C., who will be followed by Dr. D. Thomson, Dr. R. A. Bolam, Dr. A. Campbell, Dr. D. Lees, Dr. David Watson, and Mr. Campbell Williams, among others. Medical officers of the Colonial and Allied Armies will be welcome at the meeting.

THE LANCET, AUGUST 24TH, 1918.

THE Manager of THE LANCET would like to re-purchase or to receive copies of the issue of August 24th for which readers may have no further use, to enable him to replace copies for libraries and institutions in India and the East which were lost at sea owing to enemy action. Such copies should please be addressed to him at 423, Strand, London, W.C.2.

THE LANCET, VOL. II., 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET which was completed with the issue of Dec. 28th, 1918, is now ready, and copies have been supplied gratis to those subscribers who have, up to Jan. 22nd, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2. Such applications should be sent in at once.

PROSTHESIS OF THE LOWER LIMB.

BEFORE the war amputations of the limb were becoming rare; now the number of British sailors and soldiers requiring an artificial leg is about 40,000, a number sufficiently large to give rise almost automatically to inquiries as to the construction of artificial limbs. Although the problems presented by artificial limbs have not been completely solved in the case of the lower limb, a considerable measure of agreement as to the modes of their solution exists; for this reason the following article is limited to the consideration of this part of the subject.

Condition of the Stump.

Before an artificial limb can be fitted the stump must be in a suitable condition for wearing a limb. Owing to the unfavourable conditions under which many of the primary amputations have been performed subsequent trimming operations (or rarely re-amputations) are necessary in the majority of cases. At the beginning of the war 90 to 95 per cent. of amputation stumps seen at a German limb-fitting hospital required a second operation to render the stump painless and capable of wearing a prosthesis, but this proportion during the second year of the war diminished to 75 per cent.

The stump must be covered with sound movable soft parts which, however, must not be excessive in amount, especially if any part of the weight of the body is to be borne on the end of the stump. Excessive mobility of the soft parts of a stump is detrimental. The mobility is brought about by the surgeon, instead of fixing the muscular aponeuroses to the end of the bone, suturing the flexor and extensor masses to each other across the end of the bone and healing taking place without adhesion between the aponeuroses and the bone. When the patient attempts to move the stump the first effect is the movement of the scar to and fro over the end of the bone. When a limb is fitted and the patient tries to walk much power is lost by this movement; friction between the skin and the limb is liable to produce abrasions.

The scar should be thin, movable, and neither eczematous nor ulcerated. Ulceration of the scar often results when a guillotine amputation (usually performed as a temporary measure) is not followed by a re-amputation; the fibrous scar resulting often gives rise to trouble. On flexion of the artificial limb the soft parts of the stump are dragged up, thus interfering with the nutrition of the scar.

When the skin flaps are voluminous a troublesome eczema of the skin is sometimes seen. The skin is usually adherent to the bone; the condition is usually the result of a secondary operation performed while the tissues were in too septic a condition to allow of primary union.

Scars over the end of the bone do not always prevent the use of an end-bearing pad.

A posterior scar is to be preferred in all amputations of the thigh and leg where considerable pressure has to be borne by the front of the lower end of the stump when the artificial limb is lifted or swung forward.

Although the best end-bearing stumps are those in which the section has been made through cancellous bone, end-bearing is possible when the section has been made through the compact bone and medullary cavity of the shaft. In the lower part of the leg the area of bone is too small to permit of end-bearing; in view of the fact that a stump of 7 to 9 inches in length affords sufficient leverage re-amputations are often permissible in this region.

Outgrowths of new bone-forming spurs rarely give rise to trouble; they are seldom large except in the thigh, when they are usually found at the inner side of the end of the bone, a situation not exposed to much pressure.

Other conditions obviously requiring treatment before the fitting of a limb include painful nerves and the presence of sinuses. If necessary surgical measures must be taken to render the movement of the joint above the site of amputation as free as possible; daily passive extension of the hip-joint as soon as the condition of the wound allows does much to prevent a deformity commonly found.

Provisional Appliances.

Universal opinion in Germany, Austria, France, and Belgium is in favour of the use of a provisional limb as early as possible; the use of crutches is not allowed any more

than is inevitable. The disadvantages of crutches include the danger of crutch palsy, the alterations of balance caused by the long use of only one leg, and the loss of power in the muscles of the stump. Besides preventing these disadvantages the use of a provisional limb also prevents pain and stiffness of joints; the circulation in the stump is improved, healing and shrinking are expedited, and end-bearing promoted.

In the case of the lower limb the provisional appliances often takes the form of a Thomas's knee splint attached to the body by a suspender passing over the shoulder on the sound side. Flexion of the hip is assisted by the use of a strap attached in front to each side of the splint. The stump is encased in a plaster socket in which the sides of the splint are incorporated. Professor Mommson uses a plaster socket and fastens to it the finished artificial limb.

Provisional appliances can be used five or six weeks after the amputation.

Construction of the Bucket: Materials Used.

The first point to consider in regard to the artificial lower limb is the construction of the bucket. No definite conclusion has yet been reached as to which is the best material. Although at present in practically every instance the bucket is made of wood or of leather, strengthened with steel supports, both these materials have disadvantages which prevent their being ideal. Leather has a tendency to "give"; the shrinking of stumps after fitting prevents a cavity carved out of the interior of a wooden block to fit a stump in its earlier condition from being satisfactory at a later stage.

Experiments are being made as to the suitability of other materials. The value of such different materials as ply wood and glue, combined with muslin bandages, is being tested. A specially prepared liquid glue is well worked into the muslin bandage while it is being wound round a plaster-of-Paris cast. When dry the surface is rubbed with sandpaper and varnished. The material, it is claimed, is equal to celluloid or acetone, but is very considerably cheaper; it is light, strong, non-flammable and, when varnished, practically impervious to moisture. At La Panne Dr. Martin is experimenting with wood shavings and glue. With a plaster model of the stump as a foundation, he glues together several layers of beechwood shavings, each layer being arranged in a different direction. The glue is especially prepared with the object of rendering it impervious to moisture.

The great advantage afforded by the use of wood is the independence of the external form of the limb of the shape of the socket; this feature is not presented by any other material used in the construction of limbs. Of the various woods used for the purpose, willow is the most popular in England and America. It combines the maximum of strength with the minimum of weight; in addition to being pliable it has the advantage of not undergoing any change of form under the influence of changes in the humidity of the atmosphere. Seasoned wood is best, but unfortunately owing to the greatly increased demand kiln-dried wood must now be largely used; this method of drying increases the liability of the wood to crack.

Methods of Fitting the Bucket.

At Roehampton House the process of making artificial limbs can be seen from start to finish. The trunks of willow are sawn into appropriate lengths for thigh and leg pieces, the bark trimmed off, and the block roughly hewn to its future shape. If intended for a thigh bucket the central portion of the block is "pulled" (drilled out) by a machine. The shapes of the top and bottom of the bucket are roughly outlined on the ends of the block and superfluous portions removed by a band saw.

Various methods are used to ascertain the dimensions of the stump. Plaster casts are still held in favour by some fitters; the stump is bandaged with plaster-of-Paris bandages and allowed to set; with this as a mould a cast is made. Certain precautions are necessary: To reproduce the form of the stump, when wearing a bucket, as accurately as possible the stump is bandaged with the patient in the erect position. To reproduce the alteration of form caused by pressure on the end and sides of the stump by the end-bearing and bucket, a sock is worn over the stump and pulled up tight before the bandage is applied. Care is taken to mould the plaster well on to those points on which pressure is borne; in the case of the thigh the fist brings pressure to bear just below the ischial

tuberosity. When the interior of the socket is being "pulled" trial is made from time to time of the progress by inserting the plaster cast.

Other fitters work "in profile"—measurements are taken, including the length of the stump and its circumference at different levels; a diagram is sometimes made by carrying a pencil along the inner and outer sides of the limb and stump when the patient is resting with his limb in the horizontal position over a piece of paper. The size and shape of the section of the stump at different levels are reproduced in a set of "charts" made of flat pieces of leather or metal, the outline of each chart being a reproduction of the form of the stump at the corresponding level; with these to help him to determine the desired shape the maker "pulls" the interior of the rough bucket.

Adaptation of Buckets for Various Amputations.

Certain amputation stumps, including those resulting from a Stephen Smith and Syme's amputation, are practically always covered with a leather socket. In these cases plaster casts are made, or limb and stump are reconstructed in wood from measurements; on these casts or lasts the leather is moulded. Workers "in profile" claim that they succeed in producing a bucket which grips the stump more closely than when the size of the socket is determined by the insertion of a plaster cast. In the case of a below-knee stump the lateral diameter of the limb is greater opposite the head of the fibula than at the higher level through the knee-joint; if made by cast the diameter of the top of the bucket must be equal to the greatest diameter of the interior, so as to permit the introduction of the cast; in these cases a gap is left between the stump and the inner surface of the socket above the level of the head of the fibula.

In the case of a thigh stump a considerable alteration in the form of the inner surface takes place when the limb is used for walking; contraction of the adductor muscles, especially the adductor longus and adductor magnus, then occurs.

In a recent amputation of the leg of a well-developed man the head of the fibula and the anterior tuberosity of the tibia are not prominent, but soon become so as the stump shrinks. If allowance is not made for these projections they give rise to troublesome bursae. The plaster mould then gives an impression of the stump in its present form; by altering the "charts" or "lasts" slightly to correspond with the size and shape that experience has shown will within a comparatively short time be assumed by the stump a better permanent fit, it is claimed, is produced.

The shape of the top of the thigh bucket is determined by the ischial tuberosity and the anterior part of the perineum. The ischial tuberosity is the only bony point on which pressure can be borne; to ensure that the tuberosity rests on its upper border the bucket is so constructed that the diameter at this point is less than the diameter of the limb.

The anterior part of the perineum is unable to bear pressure; the bucket must be cut down to clear this part.

In a limb for a thigh amputation the roughly made thigh bucket is "keyed" on to the knee-piece, to which is attached the leg-piece and foot with the boot on; the patient is fitted at least twice while the limb is in the rough state.

Other Points in Regard to the Bucket.

The tendency of all wooden buckets to crack is in the case of the American limbs prevented, or at least the cracking is localised, by the use of a thin covering of raw hide. This membranous covering is thoroughly wetted and spread evenly over the whole of the outer surface of the bucket, exposed to the action of heat, and then varnished; the result is a transparent covering, the presence of which can only with difficulty be detected.

The Hanger bucket is further strengthened by the insertion of screw wires tangentially to the inner surface at levels where experience has shown strengthening is required; in the case of the thigh these wires are inserted at a distance of 1 inch or 1½ inches from the edge of the socket.

A ventilation hole is always provided below the end of the stump; above this hole comes the end-bearing pad, usually made in the form of a net of intercrossing leather laces fastened through small holes to the side of the bucket.

The average life of an artificial lower limb is about three years. In the case of the first limb worn this depends to a considerable extent upon the rate of shrinking of the stump. Every patient wears at least one stump sock; these are of uniform thickness and obtained through the limb-

makers. If shrinking of the stump causes the socket to become too large another sock is added. The limit is usually reached when the man is wearing five or six socks; the bucket is then lined with leather, and if this does not suffice must be renewed. As a rule the stump ceases to shrink by the end of two years after amputation, but in a few rare instances shrinking may continue as long as seven years.

The Knee-joint.

Other parts of the prosthesis will now be described. In the construction of the knee-joint it is essential that the bolt should be placed behind the centre of gravity of the anatomical joint. If the axis of the artificial joint corresponds in position with the anatomical centre a slight degree of flexion of the knee brings the line of action of the body-weight behind the axis of the joint, when further flexion must occur. If the axis of the joint has been displaced posteriorly the weight of the body falls in front of the axis and tends, instead of producing further flexion, to lock the knee.

The distance the axis is set behind the centre of gravity of the joint depends upon the particular leg-maker. Perhaps the usual distance the axis is set back is between $\frac{1}{2}$ and $\frac{3}{4}$ inch; this amount, while allowing a sufficient margin of safety, does not interfere with the naturalness of the gait. If the axis is set further back the patient, when bringing from the flexed to the extended position, swings his foot in a slightly longer arc, causing the action to appear unnatural.

During weight-bearing the rigidity of the knee-joint is secured by the simple means of mounting the foot in a position of equinus. When the artificial limb is swung forward to take a step the heel comes in contact with the ground first; then, as the leg becomes vertical, the entire sole lies flat on the ground; with the foot in equinus this position is to all intents and purposes only possible when the knee is hyper-extended. When, therefore, the sole of the foot slopes obliquely downwards and forwards and the weight is taken on the toe the weight of the body acting vertically downwards tends to force the lower end of the thigh-piece into the hyper-extended leg-piece and prevent any movement of the two parts on one another.

As the thigh-piece is attached to the leg-piece by means of a spindle which passes through a metal eyelet hole projecting upwards from each side of the leg-piece, the action takes place between the spindle and the sides of the holes rather than between the surfaces of the thigh and leg pieces.

An arrangement must be provided to extend the leg-piece on the thigh at the appropriate phase of the step. The patient on raising the foot of the artificial limb to take a step raises and moves the limb forward by active flexion of the hip-joint; the weight of the leg-piece causes it to assume a vertical position, and thus bends the knee-joint. But during the weight-bearing phase the leg-piece must be in a vertical line with the thigh-piece. The change of the leg-piece into this position is effected by the action of gravity; when the patient is supporting himself on his sound limb the weight of the artificial limb causes it to swing forward like a pendulum. This movement is, however, both slow and incomplete. Some patients learn to supplement this pendulum movement by flexing the thigh slightly as soon as the foot touches the ground, but although this may suffice when the stump is long and the leverage in consequence powerful, in most cases some mechanism is required if the patient is not to walk with short steps and a mechanical gait.

Control of the knee is effected by cords pulling on the front end of a short lever which has the knee-bolt as a fulcrum, the posterior part of the lever being attached to the back of the leg-piece or the foot. Two cords are provided; these run over a roller and are hooked on to the front and back ends of a double suspender passing over both shoulders. When the patient raises his leg from the ground the weight of the appliance makes the cords tense; the pull on the front of the lever extends the leg-piece. By bracing up his shoulders as he throws his limb forward the patient can assist in the extension of the leg. The object of the roller is to do away with to-and-fro movements of the suspenders across the shoulders, substituting the movements of the cords round the roller inside the knee-piece.

The "knee control" used in the Hanger leg allows of an alteration of the rapidity with which the leg is extended. By tightening the suspender, the distance of the end of the lever from the fulcrum can be altered; a hinge-joint in the lever enables this alteration in length to be effected.

A knee-locking device must be provided for patients who by reason of shortness of the thigh stump are unable to control the movements of the knee-joint, or whose daily life entails much going downstairs or walking downhill. In its simplest form the knee-lock consists of a piece of stout wire running along a canal in the outer side of the bucket; this wire can be pushed down between the knee-piece and the inner surface of the leg-piece, which is guarded at this part by a metal plate; the thick wire serves as a wedge between the two parts and prevents movement.

An automatic knee-lock has been devised by Mr. F. H. Oritchley, of Liverpool. The joint consists of a very narrow barrel attached by side-irons to the thigh-piece; circumferentially to this is placed a cylinder of metal attached to the central tube of the leg-piece. The circumference of the barrel is gripped by a band-brake tightened by the pull of a rod attached to the heel. When the weight of the body is thrown on the toe-piece the foot rotates at the ankle-joint, depressing the heel, thus pulling on the rod and locking the knee-joint. This action takes place no matter the position of flexion of the knee when the weight of the body is placed on the artificial limb. When the pressure is no longer exerted on the foot, the knee-joint automatically becomes loose and the leg-piece free to swing. The band normally tends to open by its own resilience, but a compression spring is usually added to ensure the opening taking place. The range of movement of the knee-joint is limited by an external stop.

The Ankle joint.

A movable ankle-joint is now almost universally used, but the movements are commonly limited to those of flexion and extension. With the boot on, the part of the foot representing the articular surface of the ankle-joint is horizontal. The surface of the leg-piece forming the front of the joint is inclined at an angle of 15° with the ground, the back part at an angle of 30° . The wider posterior angle renders possible the degree of flexion of the foot required when the patient walks downhill.

The following describes an arrangement in common use. On the upper surface of the foot two cavities are hollowed, one in front of, the other behind, the bolt of the ankle-joint; in each of these cavities is placed a cylinder of rubber, the posterior about twice as high as the anterior. On these cylinders rests the leg-piece, ending in front in a short instep lying within the cavity hollowed out in the foot. The foot is attached to the leg-piece by a bolt made in the form of an inverted T; the base formed by a steel tube which fits into two corresponding grooves in the leg and foot is attached to the leg by the vertical part, a rod which is secured by a nut at the bottom of the hollow of the leg-piece. Upon the steel tube moves a steel U-shaped staple, the two ends of which pass through the foot and are fastened in position by two nuts secured by a locking-nut.

The ankle-joint must be kept tight enough to prevent any side motion, but not too tight to interfere with the movements of flexion and extension. The freedom of movement of the joint can be altered by tightening the nuts and compressing the rubbers, or *vice versa*, or by altering the size of the rubber buffers. If the locking-nut is not kept in position the foot works off and breaks.

The Foot.

The foot is now usually made of wood. To allow of its bending when the patient comes forward on the front part of the foot for the next step the foot is divided transversely at a level corresponding to the middle of the metatarsal bones. The front part is attached by a dorsal and plantar piece of leather or rubber reinforced by wire; between the two parts are two rubber cylinders which, when the limb is at rest, keep the toe-piece extended at an angle of about 15° , but allow of extension to 45° when the foot is pressed on the ground.

As mentioned above, the foot is mounted in the equinus position; the heel is 2 or 3 cm. off the ground, the usual height of the heel of a boot. The foot should point slightly outwards, as in the normal standing position, the usual angle being 18.5° .

Amputations Through Hip-Joint and Upper Thigh.

Special considerations for each amputation remain to be dealt with. For amputations through the hip-joint the "tilting table," perfected during the war, is the most satisfactory appliance. It consists of a leather socket moulded round one half of the pelvis, reaching upwards as high as the iliac crest and attached to the trunk by a pelvic band.

The pelvic band is a steel girdle which rests on the iliac alae and extends a short way in front of each anterior superior iliac spine; it is covered with leather and buckled together in the front. The metal is moulded to the patient's body while in a soft state, and is then tempered. To the socket an artificial limb is attached by steel supports.

To enable the patient to bend the limb at the level of the hip-joint when he sits down a hinge-joint with a spring lock is placed in the outer steel support; this joint automatically locks when the patient rises, enabling him to walk with a rigid leg. On the inner side the steel piece runs around on a quadrant fastened to the under surface of the leather socket.

The "tilting table" has also proved to be the most suitable appliance for high amputations of the thigh, leaving a stump of less than 7 inches in length. These stumps are often incurably flexed and abducted; also the patient with so short a stump is unable to control an artificial limb. When wearing this appliance the patient sits on his flexed stump, the end of which protrudes slightly through a hole in the front of the moulded socket.

If a patient with an amputation of the thigh has difficulty in controlling the artificial limb, a pelvic band should be fitted. A properly fitted pelvic band not only ensures firm fixation of the limb, but also prevents eversion of the foot and rotation of the bucket.

Amputations About the Knee.

A complete end-bearing is often possible in the case of amputations through the condyles of the femur, disarticulations of the knee, and very short stumps below the knee.

If a wooden bucket is to be worn, owing to the bone at the lower end of the stump being larger than at a higher level a modification of the bucket is necessary to ensure its gripping the stump firmly. The front of the lower half of the bucket is cut away and the wood replaced by leather, which laces in the middle. It is perhaps more usual of late, instead of using a wooden bucket, to encase these stumps in a tightly fitting case of sole leather.

When a trancondylar operation has been performed before the plaster mould is made it is as well to pad the edges of the cut femur. The length of the stump does not leave sufficient room for the use of a knee-bolt; movement of the knee-joint is permitted by two hinged side-steels identical with those used for below-knee amputations; these steels lock dead tight when the knee is in the position of extension.

Amputations Through the Leg.

A wooden socket can be fitted to amputations through the leg if the stump is at least 6 cm. long, if the knee-joint moves freely and can be fully extended by the patient, and if no adherent scars are present round the tuberosities of the tibia. The wooden bucket is fitted accurately to the head of the tibia and to the lower portion of the patella; it must grasp the tuberosity of the tibia firmly. The patellar tendon is capable of weight-bearing. Care must be taken lest the bucket press on the head of the fibula; a deep concavity must be present at this point.

The shape of the top of the bucket is important. To avoid nipping the flesh between the upper edge of the bucket and the lower end of the thigh corset, both these edges must be concave; a concavity of a finger's breadth below the axis of the joint suffices. The back of the socket is flattened; if hollowed out too much at this point the stump is tilted forward and the flesh at the back of the knee pinched.

The leg is usually attached to the thigh by a leather corset; side steels, hinged at the knee, connect the corset and socket.

The shorter the stump below the knee the larger the bearing surface, and therefore the better the end bearing; but on the end of any round stump, provided an adherent scar is not present, a part of the weight of the body can be borne. Occasionally, however, it is found necessary to fit a leather thigh bucket reaching up as far as the ischial tuberosity, which bears part of the weight.

The wearing of braces increases the stability of the limb and allows of looser lacing of the thigh corset, with the consequent advantage of freer movement of the thigh muscles. The braces pass over the shoulder of the sound side and are attached either to the thigh corset or the leg-piece. If the stump is short it is an advantage to attach the brace to a strap from which two branches pass down in the form of an inverted V and are fixed to the front of the leg-piece.

In the case of short stumps a leg socket should be fitted whenever possible; with the kneeling leg the gait of a patient is much less natural than when a socket is worn. When the patient has to walk on the bent knee a moulded leather bucket is provided, similar to that used for transcondylar amputations; a posterior band passing over the end of the flexed stump helps to keep the artificial limb in position.

Syme's and Chopart's Amputations.

In a Syme's amputation the end of the stump should be able to bear the weight of the body. The stump is usually fitted with a leather bucket strengthened with steels, usually four—an external, an internal, and two anterior; it rests on a cushion within the bucket. An elastic strap is attached to the top of the instep and above to each side of the front of the socket.

If the end of the stump remains sensitive the patient must wear a leg bucket, embracing the head of the tibia. In rare instances a thigh corset, with side steels jointed at the knee, must be worn.

In a true Syme's a sufficient vertical depth exists below the end of the stump for the joint to be placed at the level of the normal ankle. If the malleoli have been left the joint must be placed in the lateral steels outside the boot.

Chopart's amputations are often unsatisfactory; in about half the cases the action of the tendo Achillis and the tibialis posterior causes the foot to assume a position of equino-varus when the patient walks on the anterior end of the os calcis and astragalus. If the position of the foot is satisfactory a leather casing is moulded accurately to the foot and ankle and attached to the instep of the anterior half of the foot. Side steels are usually necessary; these should be jointed opposite the ankle-joint to permit of free flexion of this joint.

Standardisation.

Finally comes the question of standardisation. The large number of artificial limbs required has caused attention to be directed towards the possibilities in regard to this. The chief advantage to be gained from standardisation is the ease with which a damaged part can be replaced; a certain saving of money will also be effected, but only slight, because the cost of a limb is due not so much to the expense of the material as to the cost of labour. Another advantage would be the possibility of ensuring the same quality of material in each limb.

It is obvious from what has been written above that standardisation of the bucket is impossible, but standardisation of the component parts of the limb is possible in many cases.

The Army, before and in the earlier stages of the war, was composed of men of more or less similar physique; certain standards as regards height and chest measurement were maintained, with the result that the physique of the average soldier ranged within circumscribed limits. Even later in the war when these standards were more or less abandoned, by a process of more or less conscious selection, the men in the fighting line were in most cases similar in physique to those of the earlier Armies.

On analysis of the measurements of men with amputations it was found that, excluding about 15 per cent. for the purpose of fitting artificial limbs, the sizes of the various parts required could be grouped into four—four sizes of feet, four sizes of leg-pieces, and four sizes of knee-pieces. With these three parts 64 combinations can of course be made.

The four sizes of feet correspond with Nos. 7, 8, 9, 10 sizes in boots. The leg-pieces are of such a form as to be suitable for the tall thin man, the man of average height and proportions, the short stout man, and the bantam—i.e., the small, well-proportioned man. It is the exception for a tall man to possess a big calf. A fat man over 6 feet in height probably suffers from some physical disability which would prevent his being accepted as a soldier; the tall very muscular man with a well-developed calf would be included in the 15 per cent. of exceptions. The four sizes of knee-joint correspond with the different sizes of leg-pieces and feet.

One size and form of ankle-joint suffice for all sizes of the other parts. The knee-bolt, with side plates fastening on to the leg-pieces, are made in four sizes, corresponding with the different sizes of knee-piece.

Another part which it is possible to standardise is used for below-knee amputations: this is the side steels for which one size only suffices.

THE INTER-ALLIED FELLOWSHIP OF MEDICINE.

A WELCOME TO THE HARVARD MEDICAL UNIT.

THE Executive Committee of the Inter-Allied Fellowship of Medicine gave a dinner at the Connaught Rooms, Great Queen-street, on Jan. 15th to the members of the Harvard Medical Unit at present paying a short visit to London, and on their way home from France, having served with the British Army since the second year of the war. Sir WILLIAM OSLER, the chairman of the Executive Committee, presided over a distinguished gathering of medical men who acted as hosts to the Harvard Unit. A letter of regret having been read from the American Ambassador for his inability to be present, the toast of "Health and Prosperity to the Harvard Unit" was given by Dr. NORMAN MOORE, President of the Royal College of Physicians of London.

Dr. NORMAN MOORE said:—

This afternoon I was examining a portrait of the first Fellow of the Royal College of Physicians, Dr. John Chamber. He was elected a Fellow of Merton College, Oxford, in the year in which America was discovered. The portrait was a most beautiful copy by Isaac Oliver of a work of Holbein, and as I examined its wonderful execution I was interrupted by a message asking me to propose the health of the Harvard Unit at this dinner, so I had at once to turn my thoughts to America, which I had never visited, and to Harvard, the fame of which we all know. I remembered that in the ancient church of St. Bartholomew, which stands over the way near the hospital with which I have been connected all my professional life, there is the richly adorned tomb of Sir Walter Mildmay, Chancellor of the Exchequer to Queen Elizabeth. He was a Puritan, and there are no figures upon his tomb, not even his own effigy, and, in addition to his epitaph, only the very serious inscription, "Mors nobis lucrum." He was the founder of Emmanuel College, Cambridge, where Harvard was educated. It is a college not unconnected with medicine; indeed it comes into the history of Sydenham, one of the most illustrious of English physicians since he wrote one of his medical epistles to Dr. Henry Paman, who became a member of Emmanuel in 1643, and was a life-long friend of his. As I looked into my memory I regretted more and more that I had never been to America. What can that famous land be like? Our old writers said El Dorado was there. In our day, when the place of some famous picture is vacant on a wall and we ask where it is, the answer is, that it has gone to America. When a library of rare books has empty shelves and the visitor asks where the books are, the answer is the same—America! Wonderful land, well knowing how to put their riches of El Dorado to good purpose. I am glad that its inhabitants should enjoy pictures and books which are worth seeking in our old world, and that they are worthy to enjoy them. But your country has a finer product than gold, a greater store at home, a nobler export to improve other nations. It produces the greatest of all the products of the world—men. The Harvard Unit is a collection of observant, ingenious, laborious, and thoughtful men, who brought their energies to help England's need, and I offer them affectionate salutation, regard, and gratitude.

Lieutenant-Colonel HUGH CABOT, C.M.G., R.A.M.C., Commanding (Harvard Unit) 22 General Hospital, responding to the toast, said:—

Now that the "Harvard Unit" has ended its mission and, like the many things referred to by Dr. Moore a few moments ago, is about "to go to America," it is perhaps possible to estimate in some degree what has been its effect and what it has really accomplished. It was the outcome of a great spirit of restlessness which existed all over the United States as the attempt to "keep the country out of war." It is perhaps not unnatural that this spirit should have been particularly evident at Harvard and that she should have desired to assist the country from which she sprung in the defence of democracy. Many of the plans with which we started, and particularly our surgical equipment, had to be revised as not suited to the existing conditions, of which we were naturally ignorant. Only the other day in winding up the affairs of No. 22 General Hospital, B.S.F., which this Unit has carried on since July, 1915, I found that we had in hand a very large number of surgical instruments which had not been out of their original cases, and which, though not well suited to the surgery of war, will, I believe, be found well adapted to the usages of peace. They have been presented to St. Bartholomew's Hospital as a token of our appreciation of many kindnesses and much assistance given by Major-General Sir Anthony Bowlby.

The original conception of the Unit was that it should provide the staff of a British base hospital for a period of three months and that it should then be succeeded either by Columbia or Johns Hopkins. This plan, however, fell through, and it devolved upon Harvard to continue the work alone if it was to be done at all. It was not, however, until December, 1916, that the importance of service for the duration of the war was realised, and at that time the Corporation of the University voted to continue the Unit for duration, and the officers were given commissions in the R.A.M.C. Then, for the first time, it was possible to make plans for the future, and develop the Unit into an efficient and hard-biting organisation. We cannot, I think, claim to have contributed much that is new or strange to the surgery of war, and perhaps if we had done so we might have laid ourselves open to the charge of being aggressively American. We have, however, tried to turn out a large amount of satisfactory work, and no matter how great the pressure for help might be we have always been able to find some. We have, to some extent, acted as a clearing house for American ideas, and have done something to extend the use of direct blood transfusion in the treatment of hemorrhage and shock.

Looking back now I believe that our most important work has been in bringing together the profession on both sides of the Atlantic.

We have sent many officers to work with clearing stations in forward areas, and in this way have brought them in contact with the British brethren. It is only since I have been intimately associated with Englishmen, Scotchmen, Irishmen, Canadians, and Australians that I have come to realise that we were, in fact, the same blood—that the differences were wholly superficial, though at times very apparent. These differences are largely matters of manners and mode of expression. The American, for instance, almost always overstates his case, and his use of superlatives is exceedingly common. The Englishman, on the other hand, generally understates his, and often appears to be trying to conceal the fact that he has a case at all. His very modesty may make him appear to his American brother as a dull fellow without much to say for himself. The American always puts his best foot foremost and selects with care that which is best polished, whereas the Englishman is likely to put forward the one that is least presentable for fear someone might think that he was trying to attract attention. Though these habits and manners nowhere touch the essentials of the men they make a brave show, and to the superficial appear to be important, and do, in fact, delay progress in the close association which we must have in the future. On the other hand, I have been deeply impressed by the fact that in a close working association Englishmen and Americans soon come together, and each sees and admires the qualities of the other. Therefore, I say to you that we must not be satisfied with a superficial relation, but must work for that close working union which alone can cement the bond. The only League of Nations which seems to me immediately possible is a working union of all the branches of the Anglo-Saxon race, and this is within our grasp. Anglo-Saxon unity must precede any League.

It is to this bringing together of the British and Americans that we have most effectively addressed ourselves. We have been part and parcel of the British Service and have given it the best that we had to give. At the same time we have "with a decent respect for the opinions of others," maintained our own manners and customs, and have perhaps lived with somewhat greater freedom and worked and played a little harder than sound British custom would sanction. We have been a gathering place for all sorts and conditions of men, and we desire to acknowledge the debt we owe to Sir William Osler in helping forward this mixing of professional men and women from both sides of the Atlantic.

Sir STCLAIR THOMSON, joint honorary secretary with Mr. Douglas Harmer and Mr. J. Y. W. MacAlister of the Inter-Allied Fellowship of Medicine, then proposed the health of the Fellowship, describing it as "a very young person; in fact, a true war baby." The origin of the Fellowship, he said, was a visit to the United States last summer by Sir Arbuthnot Lane, Sir James Mackenzie, and Colonel H. A. Bruce, who on return brought the message that American medicine was looking to London to replace Berlin and Vienna as the Mecca for the English-speaking doctor. He continued:—

The objects of the Fellowship of Medicine might be grouped under four principal headings.

1. The coordination of all the resources of medical interest throughout this country, so as to make them readily available for demonstration and investigation.

2. Initiation of schemes of scientific entertainment. These would embrace the arranging of facilities for visits to, or courses of study in, the various clinics, laboratories, museums, and other medical institutions; the regular attendance on any one particular service, or course of lecture, or demonstration, and, in addition, the preparation of specially arranged addresses, demonstrations, or scientific visits.

3. Later on the Fellowship would be actively helpful in collecting and distributing information and in facilitating visits to overseas medical schools, meetings, and congresses; in being a centre through which the temporary occupation of professional chairs or exchange of professorships might be arranged.

4. The promotion of personal friendly intercourse between the members of the profession in this country and their brethren from overseas.

To promote these objects a centre had already been granted through the kindness of the Royal Society of Medicine at No. 1, Wimpole-street. These arrangements would be made to collect, file, and circulate information on all matters of medical interest. Rooms would be available for conferences, discussions, demonstrations, or exhibitions. In fact, the Fellowship of Medicine would act as a sort of central Cook's tourist office for travellers in the medical world.

The primary object of this association is not to arrange post-graduate study. This is the care of a separate association, which is also under theegis of Sir William Osler and with which there would be the most friendly co-operation. But post-graduates were particularly desirous of continuous and intensive training in one or more circumscribed departments of medicine. Now the Fellowship caters for all visitors, not only those seeking post-graduate classes, but also those wishing to study our medical history, our institutions and organisations, our hospitals, infirmaries, dispensaries, asylums, fever hospitals, lying-in institutions, nursing homes and sanatoria, or our State and municipal hygienic arrangements. We propose to help them to hear and join in the scientific medical life of this country and provide them with entertainments of medical interest. We will help them to see any one particular man operate or hear any special clinical demonstration; to work in any laboratory or study or in any library; to visit any asylum or investigate any system of drainage. We, ourselves, are so apt to work in water-tight compartments that we forget all about the wealth of this country in other matters of professional interest which lie outside our own practice or study.

Sir StClair Thomson went on to show that the organisation of a complete course of post-graduate teaching must require time, but that they had already been able through the help of State departments and the courtesy of the deans of the London medical schools to arrange opportunities for giving scientific hospitality to Dominion and American surgeons. The Director-General of the Army Medical

Service, Sir John Goodwin, had already co-operated by arranging with the Deputy Directors of Medical Service in command in the United Kingdom to institute facilities for mutual collaboration. The future co-ordination and arrangements for instituting a great post-graduate centre would require detailed, exacting, and continuous work, and Mr. Douglas Harmer was now associated with Mr. MacAlister, the first motive force of the movement, in perfecting their programme. Sir StClair Thomson concluded by referring to the fact that Lieutenant-Colonel Hugh Cabot was the direct descendant of the pilot, Sebastian Cabot, who used to sail out of Bristol city, and was the real discoverer of the Western Hemisphere.

Sir ARBUTHNOT LANE congratulated the Fellowship Society in its good fortune in being able to fix its paternity on Sir William Osler, who would make an ideal chairman.

"He is fortunate," he said, "in possessing all the progressive capacity of our trans-Atlantic brethren combined with the tenacity of the Briton. While, as occasionally happens, doubts may arise as to the paternity of the offspring, none can exist as to the maternity. This we owe, as we do so much else, to the originality, tact, indomitable energy and wisdom of our very old and beloved friend Mr. MacAlister. Wherever trouble arises Mr. MacAlister is the man who, in the most inconspicuous manner possible, has the capacity and ability to develop new ideas or to put things straight." Sir Arbuthnot Lane was certain that the young Fellowship would grow rapidly and would require no artificial food to hasten its growth. There was enough material in London and the provinces to produce a field of study that would compare very favourably with that in any part of the world. He would like to take this opportunity of expressing to the medical departments of our Dominions also the deep debt the profession wholly in the mother country owed them. He looked to them for invaluable help in making the new Fellowship the greatest possible success.

Sir JOHN GOODWIN, the Director-General of the Army Medical Service, said:—

I may perhaps claim a longer acquaintance and friendship with the Harvard Unit than most of those who are present to-night. I first had the pleasure of meeting this Unit when in France in 1915. I had the good fortune of knowing many of the officers intimately and saw much of their work, which was of an extremely high standard, and that standard has been consistently maintained throughout the war. I think I am correct in stating that more than 150,000 British soldiers have been treated and cared for by the Harvard Unit during its stay in France. May I ask you to think what that means in the way of actual assistance to our medical service, and may I suggest that, splendid as this record is, there is also something more, something not quite so tangible but equally valued by us, and that is the sentiment of brotherhood and affectionate feeling which was brought home to all of us when the Harvard Unit came over to France in 1915 to work with our armies and to succour our wounded. The members of the Harvard Unit endeared themselves to all of us, and we eagerly welcomed the many hundreds of medical officers and nurses who, immediately the United States entered the war, and many even before that date, volunteered for service with the British Armies and were of untold assistance to us, both in this country and in the theatre of war overseas.

I am sorry to say that there have been many casualties, many deaths; in view of a medical officer's duties in modern warfare this was inevitable, and the American officers were always eager for front line work; their honoured memories will remain with us for all time. One often hears discussion as to the international sentiment between America and ourselves during the past and in the present. With regard to this an old Arab proverb has very often occurred to me. I first came across it when studying Arabic in the East many years ago. The literal translation runs as follows:—

"I and my brother may differ, I and my brother might possibly quarrel, but—it is my brother and I together against the whole world."

The Harvard Unit is now returning to the United States, leaving behind it a splendid record of work performed and carrying with it the respect and affection of everyone who has ever met any of its members or seen its work. We wish them Godspeed and all possible happiness and prosperity in the future. In saying this I am conveying the thoughts and wishes of my whole service.

General G. L. FOSTER (Canada) said:—

It is with peculiar pleasure that I join with other speakers to-night in wishing the members of the Harvard Medical Unit God-speed on their homeward journey after three years of war labour. How well I recall their arrival in France during the summer of 1915; an event which meant to those of us from America—Canada being in America—that the United States would eventually join the Allies in the great struggle to uphold the right and liberties of mankind and to avenge the outraged women and children of Belgium and France. For the sending of such men as Harvard and other Universities of the United States sent to us in those early months was bound to have a far-reaching effect throughout the whole country, and awaken men and women in all walks of life to the justice of our cause. And now that the war is at an end, right having prevailed, we all shall sooner or later have returned to our several homes with the warmest feelings of friendship for those who suffered side by side with us these weary years. That friendship will ripen into a true fellowship of two of the world's greatest people to safeguard the world against future wars. The enemy and their leaders will receive a just judgment. We may hope that they will return to their senses, and cease from following that false Kultur which is even now sinking in the afternoon of history and will in time be swallowed up in the thick night of oblivion.

Sir W. WATSON CHEYNE, M.P., then proposed the health of Sir William Osler. He said:—

Sir William Osler is well known to the medical profession all over the world for his writings and speeches and his general learning, but he occupies a peculiarly important position in connexion with the project of an international Fellowship of Medicine, especially a Fellowship of

the English-speaking races, because he has held professorships in three great countries and universities. Beginning as Professor of Medicine in Canada, in the University of Montreal, he was invited to hold a similar position in the Johns Hopkins University in the United States of America, and in the fullness of time he was invited to bring his now ripe and varied experience to the Old Country and to take up a similar position in the venerable University of Oxford.

As you have heard to-night, Sir William Osler is the chairman of the committee which is working out one part of the scheme of this Fellowship—viz., that of rendering the wealth of clinical material which exists in this country available for post-graduate study as well as our great stores of pathology in various museums, of which the great type is the Royal College of Surgeons of England. But, as Sir St. Clair Thomson has pointed out to-night, the Fellowship to be successful should also have another side—viz., that which promotes friendly intercourse between the medical men of the various nations, of which the first attempt—and I think a highly successful attempt—is our meeting here to-night.

This is the age of young men, and we have it on very high authority that we cross the watershed of life about 40, and thereafter gradually go down the hill. I therefore ventured to suggest the other night that we might divide the work of this Fellowship according to the ages, the men up to 40 being engaged in imparting knowledge in the post-graduate work, while the men at a later period of life do more on the social and entertainment side. Of course, we could not draw a very hard-and-fast line, for some might think that the experience of the older men might be of help in the post-graduate work, while the vivacity and energy of the younger men might add to the joy and pleasure of the social side. So perhaps my suggestion was not quite seriously meant and may not be taken up. I ask you, ladies and gentlemen, to drink to the health of our most popular chairman, Sir William Osler.

Sir WILLIAM OSLER responded as follows:

After thanking the company for their kind response to the toast, the chairman said that among the advantages of advancing years was the knowledge one might have of three generations, and this was his position with regard to the profession of Boston, which may be called the *cortex cerebri* of the United States. Oliver Wendell Holmes's Brahmin class existed in a larger proportion in the profession of New England than in any part of the English speaking world. It was a peculiar pleasure to him to welcome the Harvard Unit, which contained grandsons of men whom he had known well in the seventies. Opposite to him sat Major George Cheever Shattuck, whose father, Frederick Cheever (a friend of student days in Germany and Professor of Medicine at Harvard) was the son of the distinguished George Cheyne, also a Professor of Medicine, the son of George Cheyne (*primus*), called after the famous English physician of that name, and son of Benjamin Shattuck—all of whom had practised medicine in Massachusetts—*caute, caste et probe*. Five generations of Warrens had served Harvard and the Massachusetts General Hospital—John, at present in the anatomical department, son of J. Collins, still alive and well and an honorary F.R.C.S., whose ancestors, Jonathan Mason, John Collins, and John Warren (the founder of the Harvard Medical School) were great figures in Boston. And there were many other medical families—as the Bowditchs, Jacksons, Bigelows—which had given an hereditary distinction, as rare as it is valuable in the profession of any city.

The New England spirit—the keen sense of right and wrong, and the desire to help, inspired Harvard to send this Unit long before America could enter the war as a united nation. And they were fortunate in the choice of the man who has had charge. Dr. J. William White, of Philadelphia, at the outbreak of war, and until his untimely death, fought the battle for the Allies against Germany in a way I hope we shall here never forget. And our chief guest and his brother, Dr. Richard Cabot, early entered the propaganda, but they did not confine their work to the Eastern States where sympathy was largely with the Allies, but they went West to the stronghold of German influence and held public meetings, sometimes in the face of stormy and even disorderly opposition. A rude little rhyme about the Cabots indicates their position in popular opinion:—

Here's to good old Boston,
The home of the bean and the cod,
Where the Cabots talk only with Lowells,
And the Lowells walk only with God.

The Unit returns with the grateful thanks of all classes of this country for the good work it has done in the relief of the British wounded; and it is a happy augury for the future of our Fellowship that its first official act has been to greet our brethren from overseas and to wish them a happy and a safe return.

It was allowed on all sides that the dinner should prove an admirable introduction to a great movement.

THE REPORT ON DUBLIN HOUSING.

THIS report, by Mr. P. C. Cowan, D.Sc., M.Inst.C.E., is of far more than local interest, since Dublin's housing problem fundamentally resembles that of many other towns, though perhaps few have so much leeway to make up before a tolerable standard of housing is reached. For in Dublin more than 40 per cent. of the population "urgently required improved housing at the end of 1913," and conditions are much worse now. Mr. Cowan has faced the whole situation in the bold and thorough way which those who know him would have expected.

The immediate task is to build 16,500 houses with the least possible delay, and Mr. Cowan suggests replies to the many vital questions involved in their erection. Who is to build and manage them? Where shall they be built? How many shall be built per acre? What size and type of house shall be built, and of what materials? His recommendations

on these matters are worthy of careful study, for they are based on the long experience and close thought of a man who combines a practical knowledge of building with a sympathetic insight into the human needs of the people to be housed. He realises that in all our schemes we must remember that we are building not only for the present but for the future. Wages are rising, and with them the standard of comfort. Houses *just good enough* to-day will not be good enough to-morrow.

"It would be a most grievous and irretrievable error," says Mr. Cowan, "to base the standard for new houses on the present homes, habits, and incomes of the poorer classes in Dublin. In many cases they only require the opportunity to respond to better environment, and it should be remembered that the standard of housing has risen steadily for many years, and that the houses erected now may have to serve at least two generations."

This is advice which all those who build under the present Government scheme will do well to remember. Mr. Cowan's recommendation that only 10 houses should be built per acre is quite in accord with up-to-date practice; but, as land near the centre of Dublin is very dear, he recognises that if such a limitation is observed the provision of adequate transit facilities would be a necessary corollary. The absence of such facilities, and the practice—soon, all must hope, to pass away—of starting work at 6 A.M., compel too many employees to live close to their work. Hence the anomaly to which Mr. Cowan draws attention—that "poor people, as a rule, live on dear land, and rich people on cheap land."

In connexion with transit, Mr. Cowan makes the interesting suggestion that it may eventually be provided free, just as roads and footpaths are. This is by no means as impracticable a policy as it may appear at first sight. The late Alderman William Thompson, in his "Housing Handbook Up to Date," states that:—

"The cost of equipping suburban land with trams may be taken at £25,000 per mile for initial capital outlay, or including working expenses and loan charges £5000 per mile per annum. This is on the assumption that there is in each direction a five-minute service for 12 hours each day, and a ten-minute service for another six hours, or a total of 131,400 car miles per annum, and that the inclusive cost is 9½d. per mile—an outside estimate.

"It is difficult to say how much land could be served by a mile of track, but reckoning 15 minutes' walk as the maximum distance on either side of the trams, we get an area of, say, 1760 by 2500 square yards, or 1000 acres, so the annual cost of free tramway equipment may be put at £5 per acre per annum, and this sum capitalised at 30 years means £150 per acre as the initial capital outlay per acre; that ought to be sufficient to convert comparatively inaccessible land into accessible building sites, with free trams running to and fro for 18 hours each day. Now assuming an average of only four houses to the acre, this means less than 6d. per house per week rent, to include free travel."

This is considerably less than would be saved in rent by living away from the town, not to speak of the advantage of having a house surrounded by a garden instead of being wedged into a sordid street.

Almost the whole of Mr. Cowan's report is full of excellent suggestions and wise counsel. But in considering the number of bedrooms which should be provided per house he adopts a point of view which is curiously at variance with his general attitude. On the strength of some very unconvincing statistics he recommends that no less than 60 per cent. of the houses built should only have two bedrooms. Here he runs counter to all modern ideas; unquestionably it would be a catastrophe if his advice were followed. We positively *must* get away from the two-bedroomed house, which, when occupied by a family is quite inadequate, whether to meet the requirements of health or decency. One of the serious difficulties that we have to face to-day is that more than half the houses in the British Isles have only two bedrooms or less, whereas, judging from the Census returns, considerably over a million of these should have three bedrooms or more in order to meet the minimum housing requirements of their occupants. Surely, not a shadow of a case can be made out for adding to the number of two-bedroomed houses, save in the rarest cases.

But this is only a momentary "lapse from grace," and Mr. Cowan's report is a fine piece of work, and should be widely read. The plans at the end, illustrating the houses which have been erected by various Irish municipalities, should, however, be studied with discretion, since obviously only some of them are meant to be examples, while the others are warnings against what to avoid.

Correspondence.

"Audi alteram partem."

THE FUTURE OF THE AMERICAN RED CROSS IN PARIS.

To the Editor of THE LANCET.

SIR,—A permanent Chapter of the American Red Cross has been formed in Paris, known as the Paris District Chapter, and of said Chapter I am the chairman. It is proposed that this Chapter shall be the permanent organisation of the American National Red Cross in France, and its functions will be to carry on to a conclusion the work inaugurated by the American Red Cross after the Commission to France which during the war has been in charge of said work has ceased to exist. After the completion of this work it is proposed that the Chapter shall continue to perform all functions ordinarily performed by a Chapter of the American National Red Cross. It is impossible at this time to foresee just what the character of this work will be, but among other things it may involve the care of the graves of American soldiers and sailors buried in France, and also to have an organisation constituted and capable of carrying on any work that it is proper that the Red Cross should do.

I am, Sir, yours faithfully,

GURNEY E. NEWLIN,

Major, A.R.C., Chairman, Paris District Chapter.

4, Place de la Concorde, Paris, Jan. 17th, 1919.

CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—Dr. Harry Campbell's courteous reply to my inquiry is somewhat confusing. In your issue of Jan. 4th he states—

"I have again and again referred to the prosaic fact that there are among the inhabitants of this country 200 million carious teeth, as many alveolar abscesses (pyorrhoea alveolaris), and some 30 million root abscesses."

I ventured to ask for evidence of this "prosaic fact," and Dr. Campbell replies by stating that—

"Taking the population of the United Kingdom as 45 millions, this, according to my estimate, implies for each individual $\frac{4}{5}$ carious teeth, $\frac{4}{5}$ alveolar abscesses, and 2 root abscesses for every three persons. Does this estimate strike Mr. Pedley as excessive?"

To Dr. Campbell's question I answer frankly: very excessive! Not in accordance with my experience; but that is only my opinion. Surely calculations based upon such estimates are not facts. *Facts are truths*, and can only be regarded as such when supported by irrefutable evidence. Here is an illustration. Dr. Campbell quotes extracts from Dr. James Wheatley's report of 1914 to the education committee of the Salop County Council as to the prevalence of dental caries among elementary school children, and if it is remembered that the percentages include temporary teeth as well as permanent teeth I entirely agree, because it accords with the evidence of the Schools Committee of the British Dental Association, and it has been amply proved by 1000 school medical officers during the past ten years, as recorded in the annual reports of the Chief Medical Officer to the Board of Education. One brief quotation will suffice. On p. 29 of the 1915 report it is stated—

"The proportion of defective teeth including all degrees of defect is higher than in any other malady, and often exceeds 70 or 80 per cent."

Curiously enough, Dr. Campbell seems to refute part of his estimate, for he writes:—

"When we come to examine adults we find that a considerable proportion of carious teeth have been extracted owing to the trouble they have caused, so that the number of carious teeth in a given mouth does not represent the number of permanent teeth which have become carious within it."

Either the 45 million inhabitants have the $\frac{4}{5}$ carious teeth or they have not.

With regard to the $\frac{4}{5}$ alveolar abscesses (pyorrhoea alveolaris), these diseases are not identical. Alveolar abscesses are in the majority of cases root abscesses. Pyorrhoea alveolaris is suppuration at the necks of the teeth with slow destruction of the alveolus. The dental surgeon differentiates them, as the physician does pneumonia from pleurisy. Therefore the $\frac{4}{5}$ alveolar abscesses, and the two root abscesses for every three persons, may be added together. I do not understand Dr. Campbell's estimate of pyorrhoea alveolaris. His endeavour to find figures for me

in 17 men "hastily examined" reminds me that, like many of my colleagues, I have examined during the past four and a half years quite a large number of soldiers' and sailors' mouths. I believe it is possible to identify, clinically, four or five different forms of suppurative inflammation of the gums which at first might be described as pyorrhoea alveolaris, but which heal up under appropriate treatment without the loss of any teeth.

In conclusion, I deplore the extent of dental caries and its effects, but I think much harm may be done by loose statements and exaggerated ideas. Experience has taught me that there is no royal road to the prevention of dental diseases. To believe that our nation will alter its diet to save its teeth is chimerical. The chief safeguards are habitual cleanliness, systematic inspection, and early treatment. Much has been done during the past 20 years to help the children in our residential Poor-law schools, and an excellent beginning has been made during the past 10 years by the establishment of 300 school dental treatment centres for the children of the elementary schools. Only when skilled assistance is available for every child in the country can we hope to have a nation with clean and healthy mouths.

I am, Sir, yours faithfully,

R. DENISON PEDLEY.

Railway Approach, London Bridge, S.E., Jan. 20th, 1919.

THE DREAMS OF THE TERROR-NEUROSIS.

To the Editor of THE LANCET.

SIR,—Dr. C. S. Myers (Lieutenant-Colonel, R.A.M.C. (T.O.)), in his article published in your issue of Jan. 11th, draws attention to the dreams of the terror-neurosis encountered in warfare. He raises certain points of interest, in particular as to how such dreams subside as the neurosis improves; whether there is any gradual intrusion into the incidents of warfare characteristic of the terror-dream by those of civil life.

In my experience there is rarely any such history. Patients who have suffered severely from terror-dreams during the earlier phases of their disability associate their improvement with the subsidence, not of the terrifying incidents only, but of dreaming altogether. In the majority of cases of the terror-neurosis patients in the period of cure cease to dream at all, and this is of interest in that it agrees with what the same patients so often say in reply to the questions as to the nature of their dreams before they broke down, before they were invalided, that is to say. For the most part they are consistent in saying that they did not dream at all, and certainly had had no frightening dreams.

There would appear, therefore, to be no period before the dysthymic somatic symptoms become obtrusive in which there are terrifying dreams; the somatic bodily symptoms precede the dream. At first sight this may seem to be curious; it might have been thought that when the conscious intelligence was in abeyance during sleep any emotional tone that was experienced in the waking state and was not allowed free play would make itself felt. The fact that this is not so in many cases may be associated perhaps with the intensity of the "blocking" to which it was subjected during the waking hours, the intensity being so great that it "overflows" into the sleeping state with a similar result, and is, of course, responsible for the terminal somatic symptoms of the neurosis. Once the somatic symptoms have made their appearance and the patient is in a position in which there is no further need for the emotion to be blocked, then fear does appear, and, in severe cases, not only in the dream but in the periods of wakefulness as well. Then we do see the effect of intelligent control, for as the case improves the fear leaves the patient during the day but persists during sleep when such control is in abeyance. In the course of time the control exerted during wakefulness overflows into the period of sleep and lessens the intensity of the dream. Possibly the powerful efforts made by the patient to control himself consciously operates in excess and stops dreaming altogether for a time.

We might almost go so far as to say that the patient who did experience fear in his dreams before the onset of somatic symptoms would not suffer severely when the neurosis was formed; the essential blocking of the emotion of fear in his case not being of any great intensity, not sufficiently intense

to overflow into his sleep and prevent the terror-dream, and therefore not sufficiently intense to bring about the neurosis in any degree of severity.—I am, Sir, yours faithfully,
Manchester, Jan. 14th, 1919.

DONALD E. CORE.

ENCEPHALITIS LETHARGICA AND TYPHUS.

To the Editor of THE LANCET.

SIR,—I have been struck by the close clinical resemblance which encephalitis lethargica as described in your columns by Dr. A. S. McNalty and Lieutenant-Colonel A. J. Hall bears to typhus fever, a disease little familiar to the medical profession in England except in the pages of such a book as Vincent and Muratet in the "Military Medical Manual" Series. The onset, the rash, constipation, the nervous symptoms of both organic and hysterical nature, the stupor, the inability to protrude the tongue (Remlinger's sign in typhus, hypoglossal palsy mentioned by Dr. F. G. Crookshank), and tremors are some of the striking points these diseases have in common. Epistaxis, however, has not, so far as I know, been mentioned as occurring in lethargic encephalitis; the experience of most medical officers serving with the E.E.F. is that epistaxis is also rare in typhus, contrary to the usual teaching. I inquired recently about this point from an Egyptian medical officer who had seen over 1000 cases of typhus while serving with the Turkish Army; in no instance did he observe epistaxis.

On the pathological side the cause of both diseases is unknown, but an increase of the cellular content of the cerebro-spinal fluid has been found by Major C. R. Box in lethargic encephalitis, and by Devaux in typhus in Roumania, although it is to be noted that an excess of lymphocytes was described by the former, and of polynuclear leucocytes by the latter. Finally, the low mortality of lethargic encephalitis does not contradict this thesis, for typhus mortality is based on epidemics associated with starvation, bad hygienic surroundings, and lack of proper hospital accommodation; further, a mild form of typhus (*Typhus levisimus*) has been recognised abroad for some time.

I am, Sir, yours faithfully,

H. L. C. NOEL,

— Egyptian Hospital, E.E.F.

Captain, R.A.M.C.

INVALIDISM FOR 15 YEARS THROUGH NASAL BLOCKAGE.

To the Editor of THE LANCET.

SIR,—In his article in THE LANCET of Dec. 14th, 1918, Dr. G. A. Sutherland writes that men with cardio-vascular debility "stand cold weather badly." Last winter I saw a B3 man who told me he dreaded the cold weather. He always kept several pairs of boots going and wore very thick socks, and in them he placed felt soles. Damp boots and socks were a horror to him. He said he was an invalid and had a bad circulation. By chance my attention was drawn to his nose, and I found his septum was deflected to the left side. He refused an operation. I noticed his *alæ nasi* did not move, so I suggested he should practise nasal respiration. In a week the action had become automatic, and he told me with rapture he had passed from invalidism to strength. He found that he could wear the same pair of boots every day, and even do without socks. This latter was a great advantage, as it saved him darning socks! He told me he noticed that on a cold day the air passing into his now opened-up nostrils would send his blood shooting to the tips of his toes and fingers and acted like champagne on his mind. He said the cold weather he used to dread now acted as a tonic, and he revelled in it. The only alteration in his manner of life that brought this change about was nasal respiration, which kept his nasal passage on left side patent.

I am, Sir, yours faithfully,

Dec. 20th, 1918.

CHAS. J. HILL AITKEN, M.D. Edin.

PHTHISIS IN FACTORY AND WORKSHOP.

To the Editor of THE LANCET.

SIR,—May I write a few words in answer to Sir G. Archdall Reid (THE LANCET, Dec. 28th, 1918)?

1. I consider tuberculosis a contagious disease produced by the *Bacillus tuberculosis*.

2. Even though practically everybody is exposed to the infection, only a relatively small number of human beings

die from it—only predisposed people. Naegeli (500 cases of post-mortem examination) found that 97 per cent. of the patients dying in hospital (most of them living in towns) showed evidence that tubercular infection had at one time taken place.

3. Predisposition is either hereditary or acquired.

4. Amongst the most powerful causes of predisposition, hereditary or acquired, is alcoholism.

5. We know very well that civilisation brings alcohol in its train, and that many primitive races have disappeared because they have taken to drinking "fire water."

6. But we must add also that civilisation has brought new diseases to those populations—measles, tuberculosis, syphilis.

7. Dr. Ed. Bertholet has made the following observation. Up to 25 years of age practically all his cases of death from tuberculosis occurred amongst abstainers or very moderate drinkers; over 25 years practically all the cases were chronic alcoholics. I do not know whether his researches have been confirmed elsewhere.

8. In my letter of Dec. 6th (THE LANCET, Dec. 14th, 1918) I was trying to suggest a possible explanation of the great difference in mortality from tuberculosis between men and women under practically similar living conditions, the only difference between them being what Dr. W. O. Sullivan has called "industrial alcoholism" in the men.

I should be very glad to know if Sir G. Archdall Reid and Professor Benjamin Moore have other explanations or hypotheses to offer regarding these facts, my opinion being that women are certainly living, in their homes, under conditions more favourable to contracting tuberculosis, and to death from it, than their husbands.

I am, Sir, yours faithfully,

M. F. BOULENGER.

Darenth Industrial Colony, Dartford, Kent, Jan. 10th, 1919.

THE LEUCOCYTE COUNT IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—I have seen a few references to the blood in influenza in papers published on the recent epidemic, and they all confirmed past experience. So far as they go my results do the same, but I made no total counts. Obviously this omission could not introduce abnormal cells into my films or take away from them normal forms which they did not contain. And in these respects alone has my experience been exceptional. Excluding moribund and mild cases, it is based on the examination of three moderately severe uncomplicated cases which made good recoveries, and on three cases with severe bronchitic or pneumonic complications which died after 6–10 days of illness.

Briefly, in seven examinations of the fatal cases I saw no eosinophile, and in the other cases these cells disappeared during the height of the disease. Again, in every one of the six cases plasma cells were seen on the fourth day or later. Usually 1 or 2 per cent. were present, but in one of the fatal cases there were 5 per cent. on the sixth day—four days before death. I have never seen anything approaching this in the adult, and it is no exaggeration to call it a phlogocytosis.

In pneumonia and typhoid the eosinopenia is well known. In whooping-cough I have seen 3 per cent. of plasma cells in children. But in a woman of 46, previously healthy, 5 per cent. in influenza seems worthy of record.

I am, Sir, yours faithfully,

Baling, W., Jan. 19th, 1919.

R. CRAIK, M.D. Glasg.

METRRORRHAGIA IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—The very complete and excellent account of the last influenza epidemic by Dr. Adolphe Abrahams, Dr. N. Hallows, and Dr. H. French in THE LANCET of Jan. 4th, seems to me to require one slight emendation from the clinical side, in which only I am able to criticise. It is said that in the hæmorrhages nothing abnormal was found from the uterus. If the authors will make a few further inquiries they will find that while epistaxis was common in males, it was rare in females, but these latter in a large proportion had menses coming on during the fever and before the proper time. It was at least so in this neighbourhood, and not alone in my experience. In two instances definite miscarriages

occurred. One pregnancy terminated three weeks before time on the second day of illness and the influenza ran an ordinary course afterwards of about a week, the mother nursing her baby all the time. One patient aborted at seven months about 12 hours after lung symptoms with cyanosis had appeared; the child was stillborn and the mother was dead about 16 hours afterwards, the third death from the septicæmia in that house and family. It seemed that epistaxis or metrorrhagia always denoted a bad or prolonged attack.

Another point was that a high temperature did not mean a severe attack; three cases had an ascertained temperature about the second or third day of 106° F. and they all came to normal in an average time and afterwards recovered quickly. They were all in girls and in families who kept clinical thermometers; probably there were others, for I am glad to say only a minority of my patients indulge in the luxury of thermometers.

I am, Sir, yours faithfully,
St. Ives, Huntingdon, Jan. 6th, 1919. W. R. GROVE.

WAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—In the contribution of Dr. O. S. Myers to the study of shell shock in your issue of Jan. 11th there occurs the following statement:—

"Moreover, every physician of experience must have met, with patients suffering from functional deafness whose sleep has not been in the least disturbed by the loudest noises."

May I venture to ask Dr. Myers whether he or any observer in whom he has confidence has recorded any number of such cases? So far as I am aware, many of us believe that functional deafness is extremely rare, and that it can only be diagnosed with certainty after recovery has taken place. For my part, were the question addressed to me, I should have to answer it with a decided negative.

I am, Sir, yours faithfully,
Jan. 17th, 1919. P. McBRIDE.

THE "SPECTRUM" OF EPILEPSY.

To the Editor of THE LANCET.

SIR,—The weirdness of some of the fits of some of the men discharged from the Army as epileptic makes prominent in one's mind the ever-present question: Whether there is a boundary line between epilepsy and hysteria? To be always able to tell hysteria from epilepsy suggests inexperience; it is easier to the medical student than to the epileptologist. The student can quote a text-book. The fact may be that there is no dividing line. As we know nothing about epilepsy—though much about epileptics—and the physiology of the nervous system is still an infant, fanciful explanations are still permissible. We may fancy that there are three diseases: malingering, which is an affair of the consciousness, hysteria (rampant egoism of the subliminal self), which is an affair of the subconsciousness, and epilepsy, which is an affair of the unconsciousness. If that be so, there are no dividing lines between the three diseases. Epilepsy shades into hysteria and hysteria into shamming, as the colours shade into one another in the spectrum. It might tend to promote scientific treatment of convulsive diseases if the physician would make a spectrum-like chart of malingering, hysteria, and epilepsy, and attempt to plot on it the individual fits of his particular patient.

I am, Sir, yours faithfully,
ALAN McDOUGALL,
Director of the David Lewis Epileptic Colony.
Sandle Bridge, Cheshire, Jan. 19th, 1919.

ISAAC DOBRÉE CHEPMELL.

To the Editor of THE LANCET.

SIR,—The death of Dr. I. D. Chepmell was briefly noted in THE LANCET of Jan. 4th. He was one of the oldest members of the profession, but having left London many years since his life is familiar only to a few. Born in Guernsey in 1828, the second son of Captain Charles Chepmell, he was at first educated at Elizabeth College, Guernsey, and later at King's College, London. In 1850 he took the L.S.A. and then travelled in France and Italy with Lord Holland. He became master of French and Italian, thus laying the foundation of his future professional success. In 1859 he married and settled in Paris, where he continued

to practise till the Franco-German War. While in Paris, where he became physician to the Galignani Hospital, he had many distinguished Frenchmen as patients and was Foreign Correspondent to THE LANCET for many years. Settling in London in 1871, he practised there until his sight failed as the result of glaucoma. Here also he continued to advise many distinguished foreigners. The Empress Eugénie was his patient and friend. A skilful practitioner and a gracious personage, he had many warm attachments.

Chepmell was a keen and expert swordsman, and several of his London colleagues were induced by his example to take up fencing. Of his two sons one became a member of the medical profession, the other entered the Army, and three of his grandsons have fallen during the war.

I am, Sir, yours faithfully,
Devonshire-place, W., Jan. 20th, 1919. GEORGE H. SAVAGE.

AMOEBC DYSENTERY CARRIERS: A CORRECTION.

To the Editor of THE LANCET.

SIR,—In my recent article on amoebic dysentery carriers among new entries to the Royal Navy (THE LANCET, Jan. 11th) I made the statement that *Lambliæ* "is not known to be a normal parasite of the cat." This appears to have been erroneous. Neumann, in "Parasites et Maladies Parasitaires du Chien et du Chat" (Paris, 1914), mentions the cat among the list of hosts from which this parasite has been recorded.

I am, Sir, yours faithfully,
Jan. 20th, 1919. H. A. BAYLIS.

PLACE AUX EMBUSQUÉS?

To the Editor of THE LANCET.

SIR,—An open appointment as medical officer to the Corporation of Birmingham Pensioners' Hospital was advertised, preference being given to "senior men having recent hospital experience." A Lieutenant-Colonel, a Major, and three Captains, Royal Army Medical Corps, all with war service, were candidates. The appointment was given to a young recently qualified man who has never served his country. The undersigned gave up a good position in 1914 to do his bit. He has served continuously in four hospitals in Egypt and France since then, and was foolish enough to hope that such war experience would be taken into consideration in making the appointment.

Demobilisation of temporary Royal Army Medical Corps officers is imminent, and it is a great source of anxiety to many men whose practices are now derelict, how are they to provide for the future of those dependent upon them.

I am, Sir, yours faithfully,
A. W. COMBER, R.A.M.C.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Major R. G. Archibald, D.S.O., is placed on the half-pay list under the provisions of Article 307 (7), R.W. for Pay and Promotion.

Temporary Captains relinquishing the acting rank of Major on re-posting: J. H. Hood, A. M. Crawford, J. Greene, A. Manuel, W. H. D. Smith, R. C. Alexander.

Temp. Capt. G. G. Buchanan to be acting Major whilst specially employed.

Temporary Lieutenants to be temporary Captains: H. M. Berry, J. L. Schilling, T. A. Fall, A. Robin, R. H. Vercoe, H. M. Birkett, C. A. A. Lever, S. Johnson, L. W. Huellin, H. Gibson, C. Clyne, T. J. Cobbe, P. Savill, G. R. Jeffrey, W. B. Valle, E. Gandy, E. O. Hughes, A. P. Hall, J. P. O'Mahony, G. B. Proctor, J. Mathewson, W. J. B. Lavery, C. M. Elliston, E. G. Bunbury, J. C. Duncanson, C. I. McLaren, C. Dean, H. M. Grace, G. O. M. Davis, E. R. Griffiths, G. A. Thompson, D. C. McCormick, C. G. Burton, R. N. Porter, B. A. I. Peters, F. J. Cairns, J. B. Taylor, I. L. MacInnes, V. J. A. Wilson, C. E. F. Salt, F. King, S. S. Rosebery, G. Young, W. H. A. Elliott, H. S. Dixon.

Temp. Hon. Lieut. H. A. Haskell to be temporary Honorary Captain. Officers relinquishing their commissions: Temp. Col. O. Richards, C.M.G., D.S.O., A.M.S., and retains the rank of Colonel. Temp. Lieut.-Col. Sir J. W. Barrett, K.B.E., C.B., C.M.G., and retains the rank of Lieutenant-Colonel. Temp. Hon. Lieut.-Col. H. A. Powell and G. Dreyer. Temp. Majors W. M. Robson and A. J. Cleveland and retain the rank of Major. The following retain the rank of Major: Temp. Capts. (acting Majors) F. B. Young, A. Richmond, H. H. Warren, W. B. Dickie, E. R. Grellett, W. M. Badenoch, R. S. Renton, J. L. Menzies, Temp. Capts. J. S. B-llas, J. B. McCabe, J. M. Glasse, A. R. Jackson, J. H. Hebb. To retain the rank of Captain: Temp. Capts. G. W. Ancrum, H. E. Brown, R. N. Porter, H. G. Rloe, G. H. Rodolph, G. B. Moffatt, O. Y. Flewitt, J. Forrest, A. G. J. Thompson, E. W. B. Ruxton, A. D. Hamilton, H. Smurthwaite, S. H. Ryan, D. C. McArdle, A.

Dingwall, J. L. Johnston, J. T. Gunn, A. B. Laidlaw, W. W. Wood, J. A. H. White, A. Dixon, J. Ferguson, R. H. S. Torney, D. J. McAfee, W. B. Watson, T. A. Matthews, G. E. Oates, J. L. McCann, D. J. Foley, C. Watson, L. J. Weatherbe, W. Warburton, J. H. Morris-Jones, J. Fletcher, T. E. Flitcroft, S. McNair, F. W. Perry, A. H. Murch, W. H. Best, G. R. Phillips, J. A. V. Matthews, J. Reid, M. Golding, J. C. Wootton, R. W. Greator, A. S. Wilson, F. S. Adams, D. T. H. Croly, F. Barnes, T. Henderson, B. H. Worth, S. C. H. Bent, M. W. Baker, H. Walker, A. H. B. Hartford, T. N. Bride, G. Unsworth, D. Mann, H. P. Wright, R. E. Whitting, J. Morris, G. T. Bogle, A. F. Waterhouse, P. W. L. Camps, J. Steward, G. P. Young, M. S. Selser, V. Lloyd-Evans, A. Simpson, P. E. MacNaught, R. F. Emsinon, A. G. Wilson, C. J. Nicholson, H. Tren, G. Graham, J. Clark, F. M. H. Sanderson, T. B. McKendrick, G. H. C. Lumsden, A. Manuel (acting Major), E. Wight, G. W. Thompson, J. Cameron, H. D. Haworth, W. B. Hendry, E. A. B. Poole, H. F. Warner, T. B. Johnston, K. Fraser, R. Appleton, D. J. McLeish, O. Smith, P. de S. Smith, R. C. Harkness (acting Major), J. C. Mead, R. O. Smyth, B. L. Hutchence, A. S. Bradley, W. H. Blakemore, J. T. Carson, S. S. Brook, W. P. Lowe, R. B. Johnston, G. H. Davy, W. C. Fowler, T. F. Murphy, H. E. Middlebrooke, J. Holland, C. Barnard, W. V. Naish, G. Stoddart, L. Bromley, H. Upcott, G. P. Humphry, G. W. Curtis, A. J. Hutton, A. J. McConnell, H. Wildas, A. Mason, E. J. Morton, R. Edridge, H. M. Joseph, F. W. Ritson, A. G. Henderson, D. A. Dewar, R. E. Walker, A. Ferguson, A. Bryans, A. H. Mountcastle, J. H. Trench, R. J. Bonis, D. A. Powell, E. F. R. Alford, J. V. Cope, G. C. Cossar, D. W. Daniels, G. B. Moffatt, H. S. Millar, H. R. Ramsbotham, C. A. R. Gatley, E. W. Milne, J. Wright, J. Proctor, Temp. Hon. Capt. R. A. Holmes and C. E. S. Jackson retain the hon. rank of Captain. Temporary Lieutenants retaining the rank of Lieutenant: W. Q. Wood, D. Robertson, J. Craig, R. Price, F. J. Power, C. E. Elliston, B. Hutcherson. Temporary Lieutenants: A. A. Hall, Temp. Hon. Lieut. H. A. Lownds. The undermentioned on transfer to R.A.F.: Temp. Major (acting Lieut.-Col.) J. L. Birley; Temp. Capt. (acting Major) J. H. Porter; Temp. Capt. J. H. Cooke, P. H. Young, W. S. T. Connell, L. W. Shelley, W. J. McKeand, C. W. W. James, A. G. H. Moore, F. A. Hampton, C. H. Thompson, C. K. Attlee, C. F. Graves, J. Chambre, W. Waugh, T. N. Wilthew, W. B. Dove, A. G. H. Smart, N. C. Graham, E. W. Craig, D. H. Fraser, G. Cranston, J. Freeman, W. H. Cam; Temp. Lieut. G. D. M. Beaton.

SPECIAL RESERVE OF OFFICERS.
Lieut. G. N. Groves to be Captain.

TERRITORIAL FORCE.
Major (acting Lieut.-Col.) J. Evans relinquishes his acting rank on ceasing to command a Field Ambulance.
Capt. (acting Major) H. Drummond relinquishes his commission on account of ill-health contracted on active service, and is granted the rank of Major.

Capt. A. E. Raine relinquishes his commission on account of ill-health contracted on active service, and retains the rank of Captain.
2nd Western General Hospital: Capt. C. P. Lepage reverts to the list of officers available on mobilisation and is restored to the establishment.
1st Eastern General Hospital: Major A. Cooke is restored to the establishment.

TERRITORIAL FORCE RESERVE.
To be Majors: Major (acting Lieut.-Col.) A. E. Hodder, from 3rd North Midland Field Ambulance; Major W. M. Mackay, from Attached to Units other than Medical Units; Major W. D. Milbanke, from Attached to Units other than Medical Units; Major A. B. Murray, from Attached to Units other than Medical Units; Major (acting Lieut.-Col.) A. Callam, from 2nd East Lancs. Field Ambulance; Major H. E. Corbin, from the General List.

To be Captains: Capt. R. D. Cran, F. Harvey, A. N. Crawford, John Livingston, G. Eustace, J. D. Lickley, N. G. H. Salmon, M. Wilks, O. Teichmann, from Attached to Units other than Medical Units; Capt. (acting Major) T. H. Peyton, from 1st Home Counties Field Ambulance; Capt. H. C. H. Bracey, from General List; Capt. A. J. Campbell, from South Wales Mounted Brigade Field Ambulance; Capt. J. Carroll, from 3rd Welsh Field Ambulance; Capt. C. R. Crowther, from 2nd Wessex Field Ambulance; Capt. A. C. C. Lawrence, from 2nd Northern Field Ambulance; Capt. (acting Major) G. Potts, from Attached to Units other than Medical Units; Capt. (acting Major) A. C. Watkin, from 2nd Home Counties Field Ambulance; Capt. (acting Major) S. McCausland, from 1st West Lancs. Field Ambulance; Capt. J. Penston, from Wessex Casualty Clearing Station; Capt. W. S. Forbes, from 1st London Casualty Clearing Station; Capt. W. W. J. Lawson, 3rd West Riding Field Ambulance; Capt. C. H. Lilley, from 2nd London Sanitary Company; Capt. A. V. Maybury, from 3rd Wessex Field Ambulance; Capt. C. G. Meade, from Yorkshire Mounted Brigade Field Ambulance; Capt. R. W. Nevill, from 1st Northampton Field Ambulance; Capt. (acting Major) W. Sneddon, from 3rd West Riding Field Ambulance; Capt. (acting Major) J. L. M. Symns, from 1st East Anglian Field Ambulance; Capt. (acting Major) R. M. Vick, from 3rd London Field Ambulance.

ROYAL AIR FORCE.

Medical Branch.—Major A. V. J. Richardson to be acting Lieutenant-Colonel whilst employed as Lieutenant-Colonel. L. S. Goss (Surgeon-Lieutenant, R.N.) is granted a temporary commission as Captain. Capt. J. A. Watson, Capt. H. Greenwood, Capt. E. J. Boyd (Surgeon, R.N.), Major-Gen. R. O. Munday, C.B. (retains the rank of Major-General), Capt. H. J. Shanley (Captain, R.A.M.C., T.F.), and Capt. J. A. Wilson relinquish their commissions on ceasing to be employed. Capt. A. E. McCulloch and Lieut.-Col. H. J. Hadden (Fleet Surgeon, R.N.) relinquish their commissions at their own request.

THE Swiney prize of the Royal Society of Arts has been awarded for the second time to Dr. Charles A. Mercier for a thesis on jurisprudence.

Dr. W. H. R. Rivers has been appointed *Prælector* in Natural Sciences at St. John's College, Cambridge, where he already holds a Fellowship.

The War and After.

THE CASUALTY LIST.

The names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Surg.-Lieut.-Com. M. H. Langford, D.S.O., R.N., was a student at Middlesex Hospital and qualified in 1909. He joined the Royal Navy shortly afterwards.
Surg.-Lieut. M. Meehan, R.N., qualified in Ireland in 1912 and shortly afterwards joined the Royal Navy.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Lieut. J. Clarke-Morris, West Riding Regiment and R.A.F., accidentally killed whilst flying in France, youngest son of the late Dr. K. Clarke-Morris, of Blackheath, Kent.

THE HONOURS LIST.

The following awards to medical officers in recognition of their gallantry and devotion to duty in the field are announced:—

Bar to Distinguished Service Order.

Lieut.-Col. ANSON SCOTT DONALDSON, D.S.O., 3rd Fd. Amb. Can. A.M.C.—For conspicuous gallantry and devotion to duty. This officer was in charge of the evacuation of the forward area, and showed great initiative in establishing dressing stations and collecting posts directly in rear of the advancing infantry. He kept in touch with the battalion and succeeded in evacuating the casualties almost as soon as they occurred, in spite of heavy machine-gun and shell fire.

Lieut.-Col. THOMAS JOSEPH FRANCIS MURPHY, D.S.O., 6th Fd. Amb. Can. A.M.C.—During an attack there were several wounded cases whose evacuation was being held up by the intense enemy barrage. This officer then brought up two motor ambulances, which he left some distance in rear, and came up with his runner to the village and searched for the regimental aid-post, which he found after much difficulty, all the time exposed to heavy fire himself, as he passed several times through the enemy barrage and machine-gun fire. It was through his utter disregard of personal danger that the wounded were safely cleared and many lives saved.

Distinguished Service Order.

Major JOHN CHARLES CAMPBELL, 7th Fd. Amb. Austr. A.M.C.—For conspicuous gallantry and devotion to duty. This officer was in charge of stretcher-bearers, evacuating all wounded from the right sector of the advance throughout five days' fighting. He kept close behind the infantry and kept in touch with the various medical officers under constant heavy fire. One night a direct hit completely demolished his aid-post, but he got his men to a place of safety and continued the evacuation of the wounded. He superintended the work for five days continuously with great courage and persistence, setting a fine example to all under him.

Capt. (acting Lieut.-Col.) THOMAS HENRY SCOTT, M.C., 14th Fd. Amb.—For conspicuous gallantry and devotion to duty. When the vicinity of his advanced dressing station was being heavily shelled, it was due to his coolness and able management that a number of stretcher and walking cases were evacuated quickly and smoothly. His foresight and organisation were mainly responsible for the very large numbers of officers and men successfully evacuated during this period under most difficult conditions.

Capt. (temp. Major) WILLIAM DUNCAN STURROCK.—For conspicuous gallantry and devotion to duty, when the main surgical ward and operating tent of a field ambulance were wrecked by shell fire, one officer and two other ranks being wounded. He very quickly put matters right, and, owing to the excellent arrangements made by him throughout the operations, the wounded, in spite of difficult country and lack of roads, were very rapidly collected and evacuated.

Major (acting Lieut.-Col.) GEORGE GRANT TABUTEAU, No. 1 Fd. Amb.—For conspicuous gallantry and devotion to duty in supervising the evacuation of casualties during three days' operations under heavy shell fire. He maintained a chain of medical posts in close touch with the battalions of his brigade, and the rapid removal of the wounded was due to his coolness and untiring energy, which inspired his officers and men with confidence.

Second Bar to Military Cross.

Temp. Capt. (acting Major) JOHN SAMUEL LEVIS, M.C., 51st Fd. Amb.—For conspicuous gallantry and devotion to duty. During an attack, when the regimental aid-posts were under direct enemy observation, this officer, approaching them over ground swept by machine-gun fire, made arrangements for the wounded to be evacuated by a safer route. He was indefatigable in the day in keeping touch with the aid-posts as they moved forward, and during the night took stretcher-bearers up to the front line to search for wounded.

Capt. (acting Major) CAMPBELL MCNEIL MCCORMACK, M.C., 15th Fd. Amb.—For conspicuous gallantry and devotion to duty. During various attacks this officer supervised the collecting of wounded over a large part of the divisional front. He closely followed the advancing troops with his stretcher-bearers, evacuating the wounded skilfully and speedily. On one occasion during a retirement he personally, under heavy fire, reconnoitred the ground where the wounded lay, and by his dispositions of the stretcher-bearers undoubtedly saved their lives and the lives of many of the wounded.

Temp. Capt. CHARLES GORDON TIMMS, M.C., attd. 7th Bn., R. Fus.—For conspicuous gallantry and devotion to duty. During a counter-attack this officer went forward from battalion headquarters and effected several rescues of seriously wounded men, conducting them personally to the lines. Throughout the week's fighting he worked night and day, and the manner in which he disposed of stretcher cases under heavy fire was admirable.

Bar to Military Cross.

Capt. WILLIAM JAMES DOWLING, M.C., attd. 3rd Bn., M.G. Corps, T. attd. 142nd Fd. Amb.—He was in charge of stretcher-bearers during very heavy fighting lasting for two days, and repeatedly went forward to satisfy himself that the R.A.P. were being kept clear. On many occasions he himself led forward stretcher squads under very heavy fire. He invariably displayed great gallantry, and afforded a magnificent example to all ranks working under him.

Capt. (acting Major) JOHN CREIL ALEXANDER DOWSE, M.C., attd. H.Q., 63rd Div.—For conspicuous gallantry and devotion to duty. This officer controlled the evacuation of wounded from the whole of the divisional front under artillery, machine-gun, and rifle fire, and their rapid and efficient evacuation was due to his untiring zeal and energy in maintaining constant communications between battalions and field ambulances. He set a splendid example to all ranks.

Capt. HUGH HART, M.C., No. 5 Fd. Amb., Can. A.M.C.—During an action this officer was in charge of the field ambulance stretcher-bearers. His work under very heavy machine-gun and shell fire was characterised by thoroughness and a clear and concise idea of the situation at all times which was due to his keeping in close touch with the rapidly advancing infantry. On this and other occasions he cleared all casualties with exceptional rapidity. His courage and tireless persistence were a source of inspiration to all under him.

Lieut. WILLIAM PEAT HOGG, M.C., I.M.S.—For conspicuous gallantry and devotion to duty. When his aid-post was heavily shelled he collected all his casualties with great coolness and promptitude, and conducted them to a new post. He has previously done similar fine work in action.

Capt. JOSEPH REGIS ALBERT MARIN, M.C., Can. A.M.C., attd. 22nd Bn., Can. Inf., Quebec R.—During three days' hard fighting he was indefatigable in his attention to the wounded, working often under heavy fire. He saved many lives by his skill and devotion to duty. When all the officers had become casualties, and he himself was wounded, he remained at duty and continued his good work. Later on he was severely gassed and had to be evacuated. The example of his self-sacrificing and gallant conduct had a great effect on the whole battalion.

Temp. Surg. FRANK PEARCE POCOCK, D.S.O., M.C., R.N., attd. Drake Bn., R.N.V.R.—He attended to the wounded under very heavy fire and most adverse circumstances during operations lasting several days. His courage and self-sacrificing devotion to duty were a splendid example to his stretcher-bearers, and his skill was instrumental in saving the lives of many wounded men.

Temp. Capt. (acting Major) MAURICE ALOYSIUS POWER, M.C., attd. 148th Fd. Amb.—For conspicuous gallantry and devotion to duty. Whilst in charge of stretcher-bearers he attended to and collected wounded under heavy machine-gun fire. He worked unceasingly directing stretcher-bearers, and evacuated several hundred wounded from the R.A.P.'s in his sector. Although wounded (for the third time) he remained on duty and showed great endurance, as on previous occasions.

Capt. (acting Major) CUTHBERT SCALES, M.C., attd. 150th Fd. Amb.—For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers. He exposed himself continually, moving from place to place to collect the wounded under heavy machine-gun and rifle fire. Thanks to the close touch he kept with the battalions, several hundred wounded were quickly collected and evacuated.

Capt. (acting Major) HERBERT WILLIAM WADGE, M.C., No. 10 Fd. Amb., Can. A.M.C.—This officer was in charge of the stretcher-bearers of the ambulance during five days' fighting. He worked continuously, directing the evacuation of the wounded in the forward area. Under his leadership the bearers worked strenuously, and the wounded were evacuated with great rapidity. Although considerably shaken by the explosion of a shell, he continued his work.

Capt. THOMAS WALKER, M.C., attd. 23rd Lond. Fd. Amb.—For conspicuous gallantry and devotion to duty. He took a motor ambulance car to an advanced regimental aid-post under very heavy shell fire and evacuated the wounded. Throughout the whole action he displayed great skill and disregard of danger in handling his bearers, and was night and day in the line, keeping touch with the regiments, under heavy shell fire.

Temp. Capt. PHILIP HEWER WELLS, M.C., attd. 2nd Bn., C. Gds.—When moving up to an aid-post with the battalion headquarters a shell fell on the party, causing many casualties, including the only other officer. Capt. Wells, showing complete disregard for personal safety, organised the party and attended to the wounded. Throughout the day he ceaselessly carried on his duties, and under most trying conditions, being exposed to heavy shell-fire the whole time. In spite of the number of wounded he managed to attend to all and arrange for their evacuation.

The Military Cross.

Capt. SIDNEY GEORGE BALDWIN, No. 9 Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. Under his direction the wounded were dressed and removed from the battlefield without any delay. He often led his bearers through machine-gun fire to reach wounded men, whom he successfully evacuated. All through the fighting he displayed great disregard of danger.

Lieut. BAWA HARRISHAN SINGH, I.M.S.—For conspicuous gallantry and devotion to duty and coolness under fire when in charge of the dressing station of the ambulance. The dressing station came under heavy fire at night and the situation was critical for a time. He, however, collected the wounded and brought them in. He also showed great coolness and initiative when the ambulance was bombed by aeroplanes during and after the attack.

Temp. Surg. DAVID LEISHMAN BAXTER, R.N., attd. 1st Bn., R. Marines.—For conspicuous gallantry and devotion to duty during an attack. He early established an aid-post well forward, and continued to move forward with the advance, showing utter disregard of personal danger when searching for wounded and having them dressed under heavy fire. He caused all wounded to be rapidly evacuated, and throughout set a very fine example to his staff.

Capt. NEIL DOUGLAS BLACK, Can. A.M.C., attd. 25th Bn., Can. Inf., Nova Scotia R.—For conspicuous gallantry and devotion to duty. With absolute indifference to the heavy shell fire this officer advanced with the leading companies and attended to the wounded. The second afternoon of the attack he advanced beyond the line under intense enemy machine-gun fire and dressed the wounded of other battalions. His coolness and example were a source of inspiration to officers and men.

Capt. TILLMAN ALFRED BRIGGS, Can. A.M.C., attd. 116th Bn., Can. Inf., 2nd C. Ont. R.—During an attack he rendered invaluable assistance to the wounded of this and other battalions. He attended to a number of casualties in the jumping-off position in spite of heavy machine-gun and artillery barrage. Most of his dressers became casualties, but he continued to dress the wounded. As soon as he had attended to those he pushed forward across the open and assisted those who had fallen. His services were most valuable, and his work of a very high order. He displayed remarkable coolness and energy under fire.

Capt. HERMAN MACLEAN CAMERON, No. 3 Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. This officer performed valuable work in establishing a new A.D.S. to conform with the advancing line, under heavy machine-gun fire and artillery barrage, working continuously for 24 hours without rest.

Temp. Capt. FREDERICK ORLANDO CLARKE, attd. 149th Fd. Amb.—For conspicuous gallantry and devotion to duty in attending to and evacuating the wounded from the forward area under heavy rifle and machine-gun fire. He worked on until every case had been evacuated, and set a splendid example of zeal and endurance to all ranks under him.

Temp. Capt. ANDREW LESLIE EDMUND FILMER COLEMAN, attd. 2nd Bn., S. Gds.—For conspicuous gallantry, tireless energy and devotion in tending the wounded during operations. For two days and nights he never left his post, though subjected to continuous machine-gun fire and frequent bombardments of high explosives and gas. During this period a continuous stream of wounded poured in, both from his own and other units, and by his prompt attention and ceaseless hard work he undoubtedly saved the lives of many severely wounded cases.

Capt. (acting Major) FRANK COLEMAN, 6th Lond. Fd. Amb.—He displayed conspicuous gallantry and devotion to duty at an advanced dressing station which was frequently under heavy shell fire and night bombing. He attended to and arranged for the evacuation of a very large number of wounded, and his skill and able organisation were the means of saving several lives.

Temp. Capt. PURSER DAVIES, attd. 6th (London) Fd. Amb.—He worked with little or no rest for 60 hours in the open under heavy fire, dressing and evacuating the wounded. His conspicuous example of gallantry and self-sacrificing devotion to duty were an inspiration to the stretcher-bearers, whose services he organised with great ability. He saved many lives by his skill.

Temp. Capt. TREVOR G. FEATHERSTONEHAUGH.—For conspicuous gallantry and devotion to duty in attending to the wounded and withdrawing them to cover. In doing so he had constantly to move across ground exposed to fire. It was due to his ability and coolness that casualties were evacuated so expeditiously, thus preventing any hampering of the critical operation in progress at the time.

Temp. Capt. JOHN FINNEGAN, attd. 7th Bn., Lincolnshire R.—For conspicuous gallantry and devotion to duty. At one time, when the battalion was held up lining a bank, he continued to move up and down what was actually the front line, under enfilade fire, attending to and evacuating wounded of his own battalion and also of other divisions. By his disregard of danger for himself he saved numerous lives of others.

Capt. DAVID DAWSON FREEZE, Can. A.M.C., attd. R. Can. R.—In an attack he displayed great courage in dressing wounded under heavy shell and machine-gun fire. He followed close up with the battalion in the attack and, in the most exposed position, he continued to dress the wounded and organise carrying parties, so that all the battalion casualties were evacuated in very short time. After the objective had been reached he proceeded in advance under heavy machine-gun fire, and dressed the wounds of a large number of the enemy and evacuated them. Learning that a number of men of another division were lying in front of our line, having been wounded two days previously, he proceeded under heavy fire, dressed their wounds and supervised their evacuation. His devotion to duty throughout was admirable.

Temp. Capt. DOUGLAS HUGH AIRD GALBRAITH.—For conspicuous gallantry and devotion to duty. He was wounded in the head whilst attending to a wounded officer, and, though in great pain, continued to carry out his duties for the remainder of the day with zeal and determination.

Capt. ARTHUR HINES, Can. A.M.C., attd. 26th Bn., N. Brunswick R.—For conspicuous gallantry and devotion to duty during an attack. He went forward with the attacking waves, and on numerous occasions, in the open and in face of the heaviest shell and machine-gun fire, dressed the wounded. His utter disregard of danger was a constant source of inspiration to all ranks.

Temp. Capt. EDWIN LANCELOT HOPKINS.—For conspicuous gallantry and devotion to duty in dressing wounded under fire during a reconnaissance. He has on all occasions displayed great coolness and resource in carrying out his work.

Capt. JAMES STEWART HUDSON, Can. A.M.C., attd. 1st Bn., Can. Mtd. Rif.—For conspicuous gallantry and devotion to duty during operations. He attended to the wounded under exceptionally heavy shell and machine-gun fire. He personally superintended the collection of wounded, and organised stretcher parties. His coolness and courageous conduct set a high example to all.

Capt. ROY BERTRAM JENKINS, Can. A.M.C., attd. 24th Bn., Can. Inf., Quebec R.—For conspicuous gallantry and devotion to duty. During two days' fighting this officer accompanied the troops, and was tireless in attending to the wounded under heavy shell, gas, and machine-gun fire. As soon as the battalion had made good its line he established a rear aid-post close up, where he received and evacuated wounded. Being exposed to fire himself, he arranged what cover was possible for the wounded and continued at work until he was sure that all had been cleared. He worked unceasingly, never thinking of himself.

Capt. ALEXANDER JOHNSTONE.—For conspicuous gallantry and devotion to duty. He displayed the utmost energy and coolness in collecting, dressing, and evacuating the wounded under heavy fire. Through his untiring efforts 200 cases were disposed of in a very short time.

Temp. Capt. JAMES GAYMER JONES.—For conspicuous gallantry and devotion to duty. Although exposed to heavy and continuous shell fire throughout the day, he continued to dress the wounded in the gun line, thereby alleviating much suffering and saving many lives. His courage on all occasions has been most marked.

Temp. Lieut. RATENSHAW NARIMAN KAPADIA, I.M.S.—For conspicuous gallantry and devotion to duty. Exposed to heavy fire, he continued throughout the action to collect and dress the wounded, who were much scattered, thereby saving many lives.

Temp. Surg. CHARLES EDWARD LEAK, R.N., attd. Hawke Bn., R.N.D., R.N.V.R.—He was with the battalion during six days' incessant fighting, and displayed untiring devotion to duty, dressing the wounded under constant fire. His gallantry and coolness were a splendid example, and inspired the stretcher-bearers under his command to great efforts to evacuate all the wounded, which was accomplished with admirable care.

Temp. Lieut. DOUGLAS BURROWES LEITCH, attd. 13th Bn., Welsh R.—For conspicuous gallantry and devotion to duty. When his battalion came under heavy shell and machine-gun fire he went forward and rendered first aid to men lying in the open and removed them to cover, being shot at by snipers and machine guns while doing so. His zeal and disregard of danger throughout the operations were splendid. Finally he was severely wounded.

Temp. Capt. JOSEPH PATRICK MCGREHIN, attd. 4th Bn., R. Fus.—While proceeding to assembly positions he was knocked over by a large piece of shell and badly shaken. Nevertheless he pushed on and established his O.P. behind a bank. Unfortunately, unknown to him, it was in the vicinity of a water point, and was very accurately shelled all day and finally hit. In spite of this, he worked on with the greatest courage, dressing with care all the wounded, and in one case amputating a foot.

Capt. ROBERT DEWAR MACKENZIE, Can. A.M.C., attd. 15th Bn., Can. Infy., 1st C., Ontario R.—For conspicuous gallantry and devotion to duty. He dressed wounded under continuous shell fire, and kept moving his dressing station forward, so as to be able to attend to the more serious cases. He cleared the cases with the utmost dispatch, and many times during the day went up, under shell and machine-gun fire, to dress stretcher cases. His conduct throughout was deserving of high praise.

Capt. DONALD CAMPBELL MALCOLM, 8th Fd. Amb., Can. A.M.C.—He was in charge of the bearer division in the left sector during the fighting. He showed great initiative and judgment at all times, keeping in close touch with the advancing troops and clearing the wounded. He worked continuously for 48 hours searching for and attending the wounded in the open. On one occasion when the advance was delayed near a wood he led his stretcher squads across the open ground which was being swept by machine-gun fire and brought many wounded back to safety. He displayed the greatest coolness under fire and a perfect disregard for personal safety during the entire action.

Capt. JOSEPH REGIS ALBERIC MARIN, Can. A.M.C., attd. 22nd Bn., Quebec R.—For conspicuous gallantry and devotion to duty during an attack. He, through his prompt dressing of wounds under heavy shell and machine-gun fire, alleviated the sufferings of many wounded and saved the lives of some of the more seriously wounded. His fearless example had the best possible effect on the moral of the men. He worked with determination and cheerfulness for two days under very trying and dangerous conditions.

Temp. Capt. WILLIAM MILLERICK, attd. 10th Bn., A. & S. Highrs.—For conspicuous gallantry and devotion to duty. Hearing that there were a number of severely wounded cases in a village, which could not be moved until properly dressed, this officer at once went forward and carried out his duties under heavy fire of every description. He continued his work untiringly throughout the day, and by his skilful organisation of dressing and carrying parties was undoubtedly responsible for saving many lives.

Temp. Capt. FREDERICK HAROLD MORAN, attd. 15th Bde., R.F.A.—For conspicuous gallantry and devotion to duty during an advance. Throughout the operations he maintained his aid-post practically at the battery positions, and dressed wounded of many units under heavy shell fire. He more than once passed through heavy barrage to get at and attend to wounded. His zeal and disregard of personal safety were splendid.

Temp. Capt. (acting Major) DUNCAN METCALFE MORISON, 38th Fd. Amb.—When the infantry were ordered to attack at short notice he went forward through a heavy barrage and completed the necessary arrangements with the medical officer of the battalion for the evacuation of the wounded. His gallantry and devotion to duty ensured the wounded being rapidly cleared and many lives were saved thereby.

Capt. DUNCAN ARNOLD MORRISON, 1st Fd. Amb., Can. A.M.C.—For conspicuous gallantry and devotion to duty. He accompanied the advancing infantry to the final objective, and though wounded himself remained on duty, continuing to do excellent work during two days' operations, establishing an A.D.S. as soon as the infantry passed through. He behaved splendidly.

Capt. ROBERT DAVIES MOYLE, 2nd Fd. Amb., Can. A.M.C.—For conspicuous courage and devotion to duty. He followed the infantry into the open while it was still under machine-gun fire. Owing to the condition of the ground it was impossible to get transport up, but he organised bearer parties, collected all wounded into a place of safety, and succeeded in securing dressings, food, and water for them, saving many lives. He set an example to all ranks under him.

Lieut. (temp. Capt.) WILLIAM DOUGLAS NEWLAND, 92nd Fd. Amb.—Under conditions of open warfare he collected a number of wounded for evacuation. The place came under very heavy shell fire, due to a number of Tanks passing close to his post. With great courage and devotion he remained with the wounded until he was able to clear them all, although the fire was so heavy that all troops had to leave the immediate neighbourhood.

Capt. FREDERICK MCGREGOR PETRIE, Can. A.M.C., attd. 31st Bn., Alberta R.—This officer displayed great courage, coolness, and devotion to duty under heavy fire and in most trying conditions. He showed great executive ability in the evacuation of wounded, and, although the casualties were very heavy, at no time was there any congestion at the R.A.P. By his skilful organisation and untiring energy many wounded were evacuated during the operation.

Temp. Lieut. GEORGE FITZPATRICK RIGDEN, attd. 16th Bn., Lan. Fus.—He established a first-aid post well forward, and in spite of heavy machine-gun fire carried on his duties with admirable self-possession, several times going forward in face of intense fire to dress wounded lying in exposed positions. It was largely due to his unselfish devotion that some of the most serious cases received prompt attention. His courage throughout was most marked. Finally he was wounded.

Capt. LEWIS WILSON SHELLY, attd. No. 1 Aeroplane Supp. Depot, R.N.—For conspicuous gallantry and devotion to duty. When this depot was heavily bombed in a night raid he organised a dressing station at the Repair Park, attending the wounded in the open. Several bombs fell close to him, wounding those around him, but he stuck to his work and saved the lives of many by his coolness and courage.

Capt. CHARLES GORDON STRACHAN.—For conspicuous gallantry and devotion to duty in charge of stretcher-bearers. He worked for 24 consecutive hours across open ground which was constantly shelled. He rallied his bearers when somewhat exhausted and disorganised by heavy fire, and set them a very fine example of cheerfulness and complete disregard of personal danger. The successful evacuation of all wounded was largely due to his personal conduct.

Capt. ROY HINDLEY THOMAS, 1st Fd. Amb., Can. A.M.C.—For superintending the evacuation of wounded when he went over the entire area, still under heavy fire, locating the wounded, and after dark succeeding in safely removing them all. His untiring devotion to duty, initiative in establishing collecting-posts, and organisation of carrying parties undoubtedly saved many lives.

BROUGHT TO NOTICE.

The names of the following medical officers, all of the R.A.M.C., have been brought to the notice of the Secretary of State for War for devotion to duty and valuable services rendered by them when prisoners of war, during epidemics of cholera and typhus fever, at the Prisoners of War Camp at Wittenberg, Germany:—

Capt. S. Field (since deceased); Maj. W. B. Fry (since deceased); Lt. (temp. Capt., acting Major) J. La F. Lauder, D.S.O., M.C.; Maj. H. E. Priestley, C.M.G.; Capt. A. A. Sutcliffe (since deceased); Maj. A. C. Vidal, D.S.O.

Also the following for valuable and distinguished services rendered in connexion with the operations in North Russia:—

Lt. F. Evans, R.A.M.C. (T.F.); Lt.-Col. T. McDermott, R.A.M.C.

FOREIGN DECORATIONS.

French.

Croix de Guerre.—Col. G. W. Barber, C.M.G., D.S.O., Austr. A.M.C.; Maj. H. d'A. Blumberg, R.A.M.C. (T.F.); Bt.-Maj. L. G. Bourdillon, D.S.O., M.C., R.A.M.C.; Capt. E. J. Dickinson, M.C., Can. A.M.C.; Temp. Capt. (acting Maj.) D. McKelvey, M.C., R.A.M.C.; Capt. G. W. Rogers, M.C., R.A.M.C. (T.F.); Temp. Capt. (acting Maj.) H. B. G. Russell, R.A.M.C.; Capt. (acting Lt.-Col.) G. P. Taylor, D.S.O., M.C., R.A.M.C.; Capt. (acting Maj.) A. P. Thomson, M.C., R.A.M.C. (T.F.); Maj. F. L. Wall, M.C., Austr. A.M.C.

Croix de Guerre, avec Palme.—Col. R. J. Blackham, C.M.G., C.I.E., D.S.O., A.M.S.

Sir Nestor Tirard has returned to 74, Harley-street, W.1, on his retirement from the command of the Fourth London General Hospital, Denmark-hill.

THE IRISH DISPENSARY DOCTORS' AGITATION.—The fight between the boards of guardians and their dispensary medical officers has taken an entire change owing to a resolution, passed unanimously by the Cookstown (Co. Tyrone) board of guardians on Jan. 11th, condemning the present dispensary system as being unsatisfactory both to the ratepayers and to the poor, and stating that the time had arrived when the poor man should have choice of a doctor for himself and his family. The idea underlying this motion (a copy of which it was decided to send to the Tyrone M.P.'s, to the Irish Chief Secretary, and to each Poor-law board in Ireland) is that the dispensary "lines" should be made available to any medical practitioner who was willing to accept them, and who would be paid at each quarter for the number of the "lines" that had been presented to him. It will be interesting to note what other boards of guardians will do in the matter. At the Coleraine board of guardians on Jan. 18th letters were read from all the dispensary doctors in that union, returning the increase of salary for the quarter, on the ground that the scale fixed by the guardians was wholly inadequate to meet the requirements of the doctors. It was moved and seconded by two of the guardians to take no further action in the matter, but saner advice was followed, and an amendment was carried (14 to 8) to consider the question at a special meeting, the proposer of the amendment saying that the scale that they had adopted was inadequate, and that the doctors should be paid a decent salary. So the question rests for the present.

URBAN VITAL STATISTICS.

(Week ended Jan. 18th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 15.5, against 16.1 and 16.0 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 14.8, or 1.0 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 3.8 in Gloucester, 4.5 in Smethwick, and 5.9 in Gillingham, to 23.5 in West Hartlepool, 26.0 in Liverpool, and 26.5 in Bootle. The principal epidemic diseases caused 161 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 60 from diphtheria, 49 from infantile diarrhoea, 24 from whooping-cough, 15 from scarlet fever, 8 from measles, and 5 from enteric fever. The deaths from influenza, which had steadily declined from 7559 to 380 in the ten preceding weeks, further fell to 274, and included 43 in London, 33 in Liverpool, 18 in Manchester, and 12 in Sheffield. There were 5 cases of small-pox, 1032 of scarlet fever, and 1145 of diphtheria under treatment in the Metropolitan Asylums Board Hospitals and the London Fever Hospital, against 5, 1058, and 1139 respectively at the end of the previous week. The causes of 54 deaths in the 96 towns were uncertified, of which 10 were registered in Birmingham, 9 in Liverpool, 5 in Gateshead, and 4 in Manchester.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 17.0, against rates increasing from 14.8 to 18.6 per 1000 in the four preceding weeks. The 319 deaths in Glasgow corresponded to an annual rate of 14.9 per 1000, and included 6 from whooping-cough, 4 from diphtheria, 2 from infantile diarrhoea, and 1 from scarlet fever. The 135 deaths in Edinburgh were equal to a rate of 21.1 per 1000, and included 8 from whooping-cough and 4 from diphtheria.

Irish Towns.—The 172 deaths in Dublin corresponded to an annual rate of 22.1, or 0.9 per 1000 above that recorded in the previous week, and included 3 from infantile diarrhoea and 1 from measles. The 121 deaths in Belfast were equal to an annual rate of 15.7 per 1000, and included 5 from infantile diarrhoea and 1 from measles.

VITAL STATISTICS OF LONDON DURING DECEMBER, 1918.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or the other of the ten diseases specified in the table was equal to an annual rate of 4.2 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4.7, 5.9, and 4.0 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Chelsea, the City of Westminster, St. Marylebone, Hampstead, Finsbury, and the City of London; and the highest in Fulham, Hackney, Bethnal Green, Stepney, Southwark, and Bermondsey. One case of small-pox was notified during the month; this case belonged to Holborn. The prevalence of scarlet fever was slightly less than in the preceding month; this disease was

proportionately most prevalent in Fulham, Bethnal Green, Stepney, Poplar, Southwark, and Lambeth. The Metropolitan Asylums Board Hospitals contained 1087 scarlet fever patients at the end of the month, against 931, 1184, and 1107 at the end of the three preceding months; the weekly admissions averaged 136, against 164, 178, and 146 in the three preceding months. The prevalence of diphtheria was about 10 per cent. higher than in November; the greatest prevalence of this disease was recorded in St. Pancras, Hackney, Bethnal Green, Southwark, Bermondsey, and Camberwell. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1051, 1155, and 1000 at the end of the three preceding months, numbered 1089 at the end of December; the weekly admissions averaged 146, against 166, 169, and 129 in the three preceding months. The prevalence of enteric fever was about equal to that in the previous month; of the 15 cases notified 3 belonged to Kensington, 2 to Hampstead, and 2 to Lambeth. There were 23 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 43, 56, and 33 at the end of the three preceding months; the weekly admissions averaged 1, against 6, 9, and 3 in the three preceding months. Erysipelas was proportionately most prevalent in Chelsea, St. Pancras, Stepney, Southwark, Camberwell, and Deptford. One case of puerperal fever was notified during the month from each of the boroughs of St. Pancras, Islington, Shoreditch, Battersea, and Wandsworth. Of the 7 cases of cerebro-spinal meningitis 2 belonged to Hammersmith, and 1 each to Paddington, Lambeth, Battersea, Deptford, and Greenwich; while 1 case of poliomyelitis belonged to Holborn and 1 to Poplar.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended Dec. 28th the deaths of 5717 London residents were registered, equal to an annual rate of 18.5 per 1000; in the three preceding months the rates had been 11.4, 27.3, and 42.3 per 1000. The death-rates ranged from 10.0 in Lewisham, 11.7 in Woolwich, 13.6 in Hampstead, 15.0 in Finsbury, 15.2 in Wandsworth, 16.2 in Hackney, and 16.3 in Greenwich, to 22.0 in Kensington, 22.1 in St. Marylebone, 23.3 in Holborn, 23.8 in the City of Westminster, 25.8 in Southwark, and 26.7 in the City of London. The 5717 deaths from all causes included 124 which were referred to the principal infectious diseases; of these, 13 resulted from measles, 9 from scarlet fever, 36 from diphtheria, 7 from whooping-cough, 5 from enteric fever, and 54 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in Finsbury, and in the City of London. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Hammersmith, the City of Westminster, Shoreditch, Greenwich, and Woolwich; and the highest death-rates in Paddington, Holborn, and Southwark. The 13 deaths from measles were 85 below the average number in the corresponding period of the five preceding years, and included 2 in Islington and 2 in Woolwich. The 5 fatal cases of scarlet fever showed a decline of 9 from the average number; 2 of these belonged to Hampstead. The 36 deaths attributed to diphtheria were 25 below the average, and included 6 in Southwark and 3 each in Paddington, St. Pancras, Islington, Hackney, and Bermondsey.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING DECEMBER, 1918.

(Specially compiled for THE LANCET.)

| CITIES AND BOROUGH. | Estimated civil population, 1917. | Notified Cases of Infectious Disease. | | | | | | | | | | Deaths from Principal Infectious Diseases. | | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living. | |
|------------------------|--------------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|------------------------------|---------------------|-------------|-------------------------------|----------------|--|--|------------|----------|----------------|--------------|---------------------|----------------|--|--------|----------------------------|--------------------------------|--|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other con- tinued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping- cough. | Enteric fever. | Diarrhoea and enteritis (under 2 years). | Total. | | | Annual rate per 1000 persons living. |
| LONDON... | 4,026,901 | 1 | 559 | 558 | — | 15 | — | 5 | 150 | 7 | 2 | 1297 | 4.2 | — | 13 | 9 | 36 | 7 | 5 | 54 | 124 | 0.4 | 5717 | 18.5 |
| West Districts: | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington ... | 122,507 | — | 14 | 13 | — | — | — | — | 2 | 1 | — | 30 | 3.2 | — | — | — | 3 | — | — | 3 | 6 | 0.6 | 186 | 19.8 |
| Kensington ... | 151,535 | — | 15 | 15 | — | 3 | — | — | 2 | — | — | 35 | 3.0 | — | 1 | — | 1 | 1 | — | 4 | 4 | 0.3 | 256 | 22.0 |
| Hammersmith ... | 114,962 | — | 13 | 13 | — | — | — | — | 2 | — | — | 32 | 3.6 | — | — | — | — | — | — | — | — | 0.2 | 146 | 16.6 |
| Fulham ... | 145,186 | — | 34 | 20 | — | 1 | — | — | — | — | — | 68 | 5.2 | — | — | 1 | — | — | — | 5 | 5 | 0.5 | 196 | 17.6 |
| Chelsea ... | 57,368 | — | 4 | 2 | — | — | — | — | — | — | — | 9 | 2.0 | — | — | — | — | — | 1 | — | 2 | 0.5 | 86 | 19.5 |
| City of Westminster | 122,046 | — | 6 | 7 | — | 1 | — | — | 2 | — | — | 16 | 1.7 | — | — | — | 1 | — | — | 1 | 2 | 0.2 | 223 | 23.8 |
| North Districts: | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone ... | 92,796 | — | 1 | 13 | — | — | — | — | 1 | — | — | 15 | 2.1 | — | — | — | — | — | — | 2 | 2 | 0.3 | 157 | 22.1 |
| Hampstead ... | 75,649 | — | 1 | 4 | — | 2 | — | — | — | — | — | 10 | 1.7 | — | — | 2 | — | — | 1 | 2 | 0.5 | 79 | 13.6 | |
| St. Pancras ... | 188,600 | — | 17 | 38 | — | 1 | — | — | 13 | — | — | 70 | 4.9 | — | — | — | 3 | — | — | 4 | 5 | 0.3 | 304 | 21.2 |
| Islington ... | 297,102 | — | 25 | 27 | — | — | — | 1 | 8 | — | — | 61 | 2.7 | — | — | — | 3 | — | — | 2 | 9 | 0.4 | 396 | 17.4 |
| Stoke Newington... | 47,426 | — | 2 | 6 | — | — | — | — | 1 | — | — | 9 | 2.5 | — | — | — | — | — | 1 | — | 2 | 0.5 | 62 | 17.0 |
| Hackney ... | 196,598 | — | 34 | 42 | — | — | — | — | 8 | — | — | 84 | 5.6 | — | — | — | 3 | 1 | — | 2 | 6 | 0.4 | 244 | 16.2 |
| Central Districts: | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn ... | 35,303 | 1 | — | 6 | — | — | — | — | 1 | — | 1 | 9 | 3.3 | — | — | — | — | 2 | — | — | 2 | 0.7 | 63 | 23.3 |
| Finsbury ... | 68,011 | — | 4 | 1 | — | — | — | — | 3 | — | — | 8 | 1.5 | — | — | — | — | — | — | — | — | — | 78 | 15.0 |
| City of London ... | 16,138 | — | 2 | 1 | — | — | — | — | — | — | — | 3 | 2.4 | — | — | — | — | — | — | — | — | — | 33 | 26.7 |
| East Districts: | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch ... | 89,675 | — | 12 | 5 | — | — | — | 1 | 2 | — | — | 20 | 2.9 | — | — | — | — | — | — | 1 | 1 | 0.1 | 135 | 19.6 |
| Bethnal Green ... | 107,362 | — | 27 | 31 | — | 1 | — | — | 5 | — | — | 64 | 7.8 | — | — | — | 1 | — | — | 2 | 3 | 0.4 | 155 | 18.8 |
| Stepney ... | 232,010 | — | 56 | 39 | — | 1 | — | — | 21 | — | — | 117 | 6.6 | — | 1 | — | — | — | 1 | 6 | 8 | 0.4 | 350 | 19.7 |
| Poplar ... | 143,443 | — | 28 | 10 | — | — | — | — | 7 | — | 1 | 46 | 4.2 | — | — | 1 | — | — | — | 3 | 4 | 0.4 | 234 | 21.3 |
| South Districts: | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark ... | 167,936 | — | 55 | 35 | — | — | — | — | 10 | — | — | 100 | 7.8 | — | 1 | — | 6 | 1 | 1 | 2 | 11 | 0.9 | 332 | 25.8 |
| Bermondsey ... | 107,635 | — | 12 | 35 | — | — | — | — | 4 | — | — | 51 | 6.2 | — | — | 1 | 3 | — | — | 4 | 4 | 0.5 | 178 | 21.6 |
| Lambeth ... | 272,038 | — | 52 | 89 | — | 2 | — | — | 6 | 1 | — | 100 | 4.8 | — | — | 1 | 2 | — | — | 6 | 9 | 0.4 | 404 | 19.4 |
| Battersea ... | 150,023 | — | 12 | 16 | — | — | — | — | 1 | — | — | 36 | 3.1 | — | — | 1 | 1 | — | — | 3 | 6 | 0.5 | 215 | 18.7 |
| Wandsworth ... | 300,787 | — | 38 | 45 | — | — | — | — | 1 | — | — | 91 | 3.9 | — | — | — | — | — | — | 5 | 6 | 0.3 | 350 | 15.2 |
| Camberwell ... | 239,461 | — | 22 | 44 | — | — | — | — | 12 | — | — | 78 | 4.2 | — | 1 | 1 | 2 | 1 | — | 4 | 9 | 0.5 | 352 | 19.2 |
| Deptford ... | 103,527 | — | 17 | 13 | — | — | — | — | 6 | 1 | — | 37 | 4.7 | — | — | 1 | 2 | — | — | 1 | 4 | 0.5 | 148 | 18.6 |
| Greenwich ... | 90,440 | — | 12 | 12 | — | 1 | — | — | 2 | — | — | 28 | 4.0 | — | — | — | 1 | — | — | 1 | 1 | 0.1 | 113 | 16.3 |
| Lewisham ... | 161,406 | — | 20 | 15 | — | — | — | — | 2 | — | — | 41 | 3.3 | — | — | 1 | 2 | 1 | — | 2 | 6 | 0.5 | 124 | 10.0 |
| Woolwich... | 131,942 | — | 22 | 11 | — | — | — | — | 3 | — | — | 36 | 3.6 | — | 2 | — | — | — | — | 2 | 2 | 0.2 | 118 | 11.7 |
| Port of London ... | — | — | 2 | — | — | 1 | — | — | — | — | — | 3 | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

The deaths from whooping-cough numbered 7, and were 45 below the average; of these, 2 belonged to Holborn. The 5 fatal cases of enteric fever were 3 below the average. The 54 deaths from diarrhoea and enteritis among children under 2 years of age were 38 below the average, and included 6 in Stepney, 6 in Lambeth, 5 in Wandsworth, 4 in Islington, and 4 in Camberwell. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during December was 62 per cent. below the average.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, Jan. 30th.—Papers:—Prof. J. C. McLennan and Mr. R. J. Lang: An Investigation of Extreme Ultra-violet Spectra with a Vacuum Grating Spectrograph.—Prof. J. C. McLennan and Mr. J. F. T. Young: On the Absorption Spectra and the Ionisation Potentials of Calcium, Strontium and Barium.—Prof. J. O. McLennan, Mr. D. S. Ainslie, and Mr. D. S. Fuller: Vacuum Arc Spectra of various Elements in the Extreme Ultra-violet.—Mr. R. O. Dearn: Emission and Absorption in the Infra-red Spectra of Mercury, Zinc, and Cadmium (communicated by Prof. J. C. McLennan).—Mr. E. Wilson: The Measurement of Magnetic Susceptibilities of Low Order (communicated by Prof. J. W. Nicholson).—Dr. F. Horton and Ann C. Davies: An Experimental Determination of the Ionisation Potential for Electrons in Helium (communicated by Mr. O. T. R. Wilson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. 1.
MEETINGS OF SECTIONS.

Monday, Jan. 27th.
ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 7.30 P.M.

Paper:
Captain William Billington, M.S., D.R.C.S., R.A.M.C., Mr. Arthur H. Parrott, M.D.S., L.D.S., and Mr. Harold Round, M.D.S., L.D.S.: Bone Grafting in Gunshot Fractures of the Jaw.

Tuesday, Jan. 28th.
MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.

Papers:
Dr. Gordon Ward: Apyrexial Symptoms in Malaria.
Dr. David Thomson: The Complement Deviation Test in Malaria.

Thursday, Jan. 30th.
BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Olas. W. Buckley, J. Campbell McClure): at 5.30 P.M.

Paper:
Dr. C. F. Sonntag: Temperature Environment and Thermal Debility, a Study of the Beneficial and Injurious Effects of Heat.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W. 1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
MONDAY, Jan. 27th.—8.30 P.M., Discussion on the Modern Treatment of Gonorrhoea of the Genito-Urinary Organs. Introduced by Col. L. W. Harrison, R.A.M.C. Followed by Capt. D. Thomson, Lieut.-Col. R. Bolam, Major A. Campbell, Capt. D. Lees, D.S.O., Capt. D. Watson, Mr. C. Williams, and others. Medical officers of the Colonial and Allied Armies will be welcomed at the meeting.

TUBERCULOSIS SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.
MONDAY, Jan. 27th.—8.30 P.M., Address:—Dr. J. D. Grant: Practical Remarks on Tuberculosis in Relation to the Upper Air- and Food-passages.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, Jan. 29th.—4.30 P.M., Paper:—Dr. F. Keeble, C.B.E.: Food Production by Intensive Cultivation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.
ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Six Hunterian Lectures on Phases in the Life and Work of John Hunter. The Lectures will be illustrated by Hunterian Preparations, Drawings, and Records:—

MONDAY, Jan. 27th.—5 P.M., Lecture IV:—Prof. A. Keith: John Hunter as a Physiological Anatomist.

WEDNESDAY—5 P.M., Lecture V:—Prof. A. Keith: John Hunter as an Experimental Physiologist.

FRIDAY—5 P.M., Lecture VI:—Prof. A. Keith: John Hunter as an Anthropologist.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), at the Lecture Theatre of the Medical School, King's College Hospital, Denmark Hill, S.E.

Course of Four Lectures on Malaria. Microscopic specimens and lantern slides will be shown at the two last lectures.

FRIDAY, Jan. 31st.—12 noon, Lecture I:—Col. Sir Ronald Ross, K.C.B., K.O.M.G., F.R.S. Officers and Men of the Royal Army Medical Corps are invited to attend.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 P.M., Wednesday, Friday and Saturday also at 10 A.M.

(Details of Post-Graduate Course were given in issue of Nov. 30th, 1918.)

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, Jan. 29th.—4 P.M., Capt. T. Carnwath, D.S.O.: Lessons of the Influenza Epidemic.

Appointments.

FINZI, N. S., M.B., has been appointed Medical Officer in charge of the X Ray Department, St. Bartholomew's Hospital.

Vacancies.

For further information refer to the advertisement columns.

Albion Infirmary.—H.S. £150.
Bath Royal United Hospital.—H.P. and H.S. £150.
Bedford County Hospital.—Res. M.O. £150.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Birmingham General Hospital.—Vacancies on Res. Staff.
Bradford Royal Eye and Ear Hospital.—Ophth. S.
Cardiff City.—Female Asst. M.O. £350.
Devonport Royal Albert Hospital.—Res. H.S. £200.
Dorset County Council.—Temp. Asst. M.O.H. £400.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Temp. Asst. S.
Govan District Asylum, Cardonald, Glasgow.—Sen. Asst. M.O. Also Jun. Asst.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.
Italian Hospital.—H.S. £150.
Leeds General Infirmary.—Res. S.O. £150. Res. Aural O. £150. Oph. H.S. £50. Also Two H.S. and two H.P.
Manchester Royal Eye Hospital.—Junior H.S. £120.
Norwich, Norfolk and Norwich Hospital.—Fourth Res. Surg. O. £200.
Putney Hospital, Lower Common, S.W.—Res. M.O. £150.
Queen's Hospital for Children, Hackney-road, E.—Res. M.O. £200. Also H.P. and H.S. £100.
Reading, Royal Berkshire Hospital.—H.P. and Sec. H.S. £250.
Royal Hospital for Diseases of the Chest, 51, City-road, E.C.—Clin. Asst. Royal National Orthopaedic Hospital.—Res. H.S. £100.
South London Hospital for Women.—Female Asst. Path. £150.
Taunton, Taunton and Somerset Hospital.—Sen. H.S. £250.
Tewkesbury Union.—M.O. £55.
University of London.—Examiners.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Vacancies on Medical Staff.
Westmorland Sanatorium, Meathop, Grange-over-Sands.—Sen. Asst. M.O. and Asst. Tuberc. Officer. £350. Also Jun. Asst. M.O. £250.

Births, Marriages, and Deaths.

BIRTHS.

PLATT.—On Jan. 16th, at Daisy Bank-road, Victoria Park, Manchester, the wife of Harry Platt, M.S., F.R.C.S., Captain, R.A.M.C. (F.), of a son.

RANKIN.—On Jan. 11th, at Cairo, Kathleen, the wife of Captain Thomas Thomson Rankin, R.A.M.C., of a son.

TANNER.—On Jan. 12th, 1918, at Nursing Home, Worthing, the wife of Captain W. E. Tanner, R.A.M.C., of a son.

MARRIAGES.

HALLINAN—CROSBIE.—On Jan. 18th, at St. Mary's Church, Clapham, Major William Edward Hallinan, M.C., R.A.M.C., to Lillian Annie Crosbie, daughter of Colonel Crosbie, C.B.

DEATHS.

MOULD.—On Jan. 14th, at his residence, Colwyn Bay, George William Mould, M.R.C.S., in his 84th year.

N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BUTTERWORTH AND Co., London, India, Winnipeg, and Sydney.
A Preliminary Course of Surgery. By R. L. Spittel, F.R.C.S. Rs 6s.

CHURCHILL, J. AND A., London.
Surface Tension and Surface Energy, and their Influence on Chemical Phenomena. By R. S. Willows, D.Sc., and E. Hatachek. 2nd ed. 4s. 6d.

Catalytic Hydrogenation and Reduction. By E. B. Maxted, F.C.S. 4s. 6d.

Transactions of the Ophthalmological Society of the United Kingdom. Vol XXXVIII. 1918. 12s. 6d.

CONSTABLE AND Co., London.
Italian Sea Power. By A. Hurd. 2s.

FIFIELD, A. C. London.
Wise Parenthood. By Marie Carmichael Stopes, D.Sc. With Introduction by Arnold Bennett. 2s. 6d.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
The Early Treatment of War Wounds. By Colonel H. M. Gray. F.R.C.S. 10s.

Manual of Bacteriology. By R. Muir, M.D., and J. Ritchie, M.D. 7th ed. 16s.

Manual of Elementary Zoology. By L. A. Borradaile, M.A. 2nd ed. 15s.

HODDER AND STOUGHTON, London.
The Disease and Remedy of Sin. By the Rev. W. Mackintosh Mackay. B.D. 7s. 6d.

LONGMANS, GREEN, AND Co., London and India.
Recent Advances in Organic Chemistry. By A. W. Stewart, D.Sc. With Introduction by J. N. Collie, LL.D. 3rd ed. 14s.

System of Physical Chemistry. By W. C. McC Lewis, D.Sc. Edited by Sir Wm. Ramsay. 2nd ed. Vols. I. and II. 15s. each.

Intravenous Injection in Wound Shock (Oliver-Sharpey Lectures. 1918). By W. M. Baylis, D.Sc. 9s.

SIMPSON, MARSHALL, LITTLEBURY, BROS., Liverpool.
Hypnotic Suggestion and Psycho-Therapeutics. By A. B. Taplin. L.R.C.P. and L.M. Edin. 10s. 6d.

Notes, Short Comments, and Answers to Correspondents.

HEALTH, MEDICINE, AND SANITATION IN INDIA.

II.

Punjab.

THE year 1917 was a healthy one for the Punjab, except for a prevalence of malaria in the last three months. The birth rate, 45.3 per 1000, was 0.1 below the quinquennial average, but the death-rate, 37.9 (the same as in the United Provinces) was 6.7 above the average, and was only exceeded by that for the Bombay Presidency (40.76) in the year under review; the high rate was due entirely to "fevers," which caused 510,812 deaths, equalling 26.42 per 1000, the highest mortality since 1908. Cholera was somewhat prevalent in Sialkot district, where there were 232 deaths from this disease; in Sialkot itself there were 11, and in Multan 118 deaths. Plague caused only 0.5 deaths per 1000, but as 4084 (nearly half) of these occurred during the last two months of the year, a bad epidemic was anticipated in 1918. At Simla there were 25 cases of enteric fever, 22 of which were among Kur peans; in 10 of these cases the disease was considered to have been contracted locally—no definite or common origin could be traced. Colonel H. Hendley, I.M.S., who presents the report, held the appointment of Sanitary Commissioner throughout the year, in addition to that of Inspector-General of Civil Hospitals.

North-West Frontier Province.

In the North-West Frontier Province the birth-rate in 1917 (32.1 per 1000) was 2.2 below the quinquennial average, and was lower than in any other province in India, except Assam; the decline is attributed to the severe outbreak of malaria in 1916. The death-rate was 29.9 per 1000, being higher than the quinquennial average (25.5); nearly all the deaths (viz., 24.8 per 1000) were returned as "fevers." No other disease caused as much as 1.0 per 1000 mortality. Lieutenant-Colonel T. W. Irvine, I.M.S., considers that the general population are too lethargic and lazy to take quinine until the attack actually comes on, and is doubtful whether its unsupervised use is of any use. He recommends the cheaper quinine as of value in treating mild infections.

Bihar and Orissa.

The growing appreciation of Western medicine is noticeable everywhere in the statistics of attendance both of indoor and outdoor patients at the charitable dispensaries. Most district boards have now set before themselves a definite programme for increasing the number of their dispensaries, and at the same time private practitioners are becoming more numerous and enterprising, and Government service is by no means the only career open to successful medical students. The province has now established a board of medical examiners and has adopted a Medical Act to control the regulation of qualified practitioners and penalise fraudulent practitioners. In this province the birth-rate for 1917 was 40.4 per 1000, a considerable increase over the ratio for 1916 (36.6), probably due to stricter registration, but lower than the average for 1911-15, which was 42.8. A table is given showing the great variation in birth-rates in the different provinces of India. Assam stands lowest (in 1917) with 31.3, and the Central Provinces highest with 48.1 per 1000. For the quinquennium, 1911-15, Madras was lowest (31.6), and the Central Provinces highest (49.2). The death-rate in Bihar and Orissa was 35.2, also higher than the ratio (32.8) for 1916, and that for 1911-15 (31.1). This increase is considered by Major W. C. Ross, I.M.S., the Sanitary Commissioner, to be a real increase, due to the general unhealthiness caused by prolonged and excessive rains. The mortality from cholera (3.1) was high. On account of the expense and difficulty in obtaining potassium permanganate for well disinfection, quicklime was used, also chloroform. The mortality from fevers (22.5) was also high, the decennial ratio for 1907-16 having been 20.6 per 1000. Anti-malarial measures on the usual comprehensive lines are being carried out, but the people appear to take small interest in the work, and the difficulty of getting them to take quinine as a preventive continues, though matters appear to be now improving. Plague caused a mortality of 1.3 per 1000, higher than in the preceding year (0.7), due partly to copious and prolonged rains. Inoculation was carried out, but it is stated that it "has never been popular, and as it is not a general preventive measure of any real value, the maintenance of a special staff for inoculation has been discontinued." Rat-killing by public agencies is also considered to be "essentially a failure because it does not accomplish the destruction of any appreciable number of rats." Evacuation appears to be the only preventive of practical value, because it is accepted by the people and is carried out promptly. Major Ross advocates "a slow but definite programme of legislation, involving a gradual advance in the standard of sanitation required in communities, with a view to enforcing the idea of citizenship and responsibility in sanitary matters."

Assam.

From the vital statistics for 1916 it does not appear that the health of the province was seriously affected by the disastrous floods of October. There were cholera epidemics of some severity in Goalpara, Darrang, Nowgong, and North Lakhimpur, but on the whole the mortality from this disease was below the average. There was no change in the general death-rate from small-pox, but the increased efficiency with which the provisions of the Vaccination Act are administered produced a substantial reduction in the prevalence of this disease in urban areas. Fever was rather more severe than usual in all districts. The mortality from kala-azar varied little from that of the preceding two years, but the tendency which this disease is showing to spread in the upper districts of the Assam Valley, which have hitherto been free from it, is a source of considerable anxiety. In Jala the death-rate per 1000, which was reduced from 43.53 in 1914 to 21.40 in 1915, again fell to 18.51 in 1916, the last figure being the lowest ever recorded for the province. The number of hospitals and dispensaries in the provinces rose during the year from 205 to 215, of which 124 were supported by local bodies, 18 by private persons, and 73 by the State.

Owing to the transfer of medical officers to military service and the difficulty of securing qualified substitutes the total number of institu-

tions at work is still less by ten than it was at the commencement of 1914. A Pasteur Institute and School of Research was opened at Shillong in January, 1917, and has made a most promising start. The Assam Medical Bill, the object of which is to protect the medical profession and the public from imperfectly trained and irregularly qualified practitioners, has been passed into law.

The birth-rate in Assam for 1917 was 31.35 per 1000, slightly higher than in 1916 (30.52), but lower than the quinquennial average (1911-15) of 32.75, and lower than in any other province for 1917. The Sanitary Commissioner, Major T. C. McCombie Young, I.M.S., calls attention to the defective character of the registration and of the population returns. The death-rate was 27.09, compared with 28.59 for 1916 and 26.37 for 1911-15. An outbreak of typhoid occurred at Shillong; the civil surgeon, Dr. Gordon Roberts, and Captain R. Knowles, I.M.S., the director of the Pasteur Institute, carried out inoculation of 1760 natives, this being the first instance of an Indian population voluntarily submitting to typhoid vaccine inoculation on a large scale. An outbreak of diphtheria occurred in a boarding school at Shillong, apparently imported from Calcutta; stringent measures of isolation were adopted, suspected cases and contacts were swabbed, and the very large European child population of this crowded hill station saved from an epidemic by the prompt action of the medical authorities. Much work has been done in the way of malaria prophylaxis, especially at Lumding, an important junction on the Assam-Bengal railway. A large distribution of quinine tablets was made, and substantial improvements effected in details of drainage, application of larvicides, &c. Kala-azar, as has been indicated, increased during the year and extended to areas previously unaffected. The disease is "tending to extinction" in Sylhet, but Nowgong, with 591 deaths from this cause, shows a considerable increase over any previous year, and the disease is now endemic in this district.

The United Provinces of Agra and Oudh.

The year was an unhealthy one. There was a heavy death-roll from cholera, plague, and malaria, owing to the long continuation of wet. The death-rate was 39.95 per 1000. The birth-rate in 1917 was 46.03 per 1000, the quinquennial average (1912-16) having been 44.91. Shahjahanpur district had the excessively high death-rate of 79.22, due to cholera and fevers. The excessive mortality throughout the provinces is put down to cholera and fevers, including under the latter head relapsing fever. Infantile mortality was excessive (215.7), tetanus being unusually prevalent. Pamphlets and instructions to mothers and midwives in the vernacular have been distributed, midwives have been trained, and at Benares, Lucknow, and Allahabad municipal dairies have been established. Cholera is still somewhat prevalent (0.46 deaths per 1000) in spite of disinfection of wells and general sanitary improvements, but is much less fatal than had latterly been the case (1.24 deaths per 1000 in 1907-16). Plague caused 129,034 deaths (2.76 per 1000), a large increase over the quinquennial average of 1.85. This is considered to be disquieting, but the weather conditions favoured spread of the disease. The fever death-rate (27.06) was also unsatisfactory, being considerably higher than the quinquennial average of 21.74; in Shahjahanpur district the ratio was 58.69 per 1000. Owing to the scarcity of qualified officers, malarial investigations had unfortunately to be discontinued, but anti-malarial works were carried out, especially at the important station at Meerut. Owing to the high price of quinine the "quininisation" of school children was ordered by the Government to be dropped. Colonel C. Macgregor, O.I.E., the Sanitary Commissioner, considers the high mortality from plague and "fevers" to have been chiefly due to excessive rainfall.

Baluchistan.

The province has enjoyed immunity from every kind of epidemic disease except cholera, which appeared in Zhob in June, 1916, when 35 villages were infected, causing 328 cases and 174 deaths. Thanks to the timely and energetic efforts of the local medical and civil officers the disease was prevented from spreading still further. A party of Poonindas who passed through the district on their way from the Punjab to Afghanistan was responsible for introducing the disease into Zhob. Antimalarial measures were adopted in several places with good results. During the year under report the number of malarial cases treated in the dispensaries of the province fell by 3.77 per cent. as compared with the number treated in the previous year. The vaccine operations among the Zarkun and Mari tribes show that the most ignorant and backward people of Baluchistan are now beginning to appreciate the advantages of vaccination.

Coorg.

An index in the well-being of the labourer is to be found in the state of the public health, which was considerably better than has been noted for several years. The number of births was 9.68 per cent. above, and the number of deaths 24.52 per cent. below the average for the previous five years. Quinine prophylaxis against malaria continued to be administered in the secondary schools with satisfactory results. 50,500 quinine powders were sold to the public through the agency of the post offices.

Delhi.

Sanitary conditions, especially within the city and civil station, continued to show the improvement which has resulted from the attention paid in recent years to this side of administrative activity. The municipal report shows that the sanitary establishment was increased, a new slaughter-house constructed, and drains extended. The important and costly antimalarial measures in the Bela were pushed on and one section completed; in the civil station a brick channel was constructed to the Najafgarh drain cut. Considerable additions were made to the city western extension, which should in the time draw off a large number of malarial occupations from the city. The heavy monsoon rains rendered the year less healthy than its predecessor, but the death-rate (32.92 per 1000) nevertheless compared very favourably with the years preceding 1914. The excess of births over deaths, though lower than in 1915-16, also reflected a far more satisfactory state of things than in 1914.

The Andaman and Nicobar Islands.

The record of the health of the year shows improvement as compared with that of 1915-16, but the incidence of sickness and mortality has still been high. The main cause of sickness was, as usual, malaria, and of death pneumonia, now recognised to be a direct result of malarial infection in the settlement. Malaria not only affects the convict population, but persistently saps the vigour of the entire official staff, leaving after-effects in its wake which are often permanent.

Hyderabad.

The difficulties to which the people were exposed on account of unseasonable rain and high prices were still further aggravated by an extremely severe epidemic of plague. In Hyderabad city alone no less than 14 053 persons died of this disease between the months of October and April. In the districts the epidemic was no less severe, and in out-of-the-way villages the suffering was very great, as it was impossible to render these people any material assistance. The results of this visitation were far-reaching and extended to almost every department of the State. Progress on the more important works was seriously delayed and schools and courts were closed for several months. Numerous temporary hospitals to deal with plague were opened at the capital and in the districts.

Central India.

All the Agencies, except Baghelkhand and Bundelkhand, were visited by plague, the only respite being in the hot weather. The incidence was severest in Indore, where there were 1777 deaths out of 2336 in the province. Fortunately, people now evacuate their houses as soon as rains begin to die, and the increasing popularity of inoculation is shown by over 90 000 persons having been inoculated in Indore. Cholera, in all parts of Central India, accounted for 5474 deaths. Small-pox was prevalent, but reliable figures cannot be given. The birth-rate shows a further fall from 11.81 to 11.15 per 1000, but the statistics are unreliable. The death-rate increased from 9.55 to 10.60 per 1000.

LEMON JUICE OR LIME JUICE?

To the Editor of THE LANCET.

SIR,—Yes, the "lime juice" used by the British Navy in 1854 was lemon juice, as Fleet Surgeon W. E. Home supposes. In my historical inquiry (THE LANCET, Nov. 30th, 1918) I gave the approximate date of the change from lemons to limes as "about 17 years" after, not the return of Sir John Ross in 1843, but the return of Sir James Clarke Ross from his search for Franklin in 1849. Records may be found of the supply of lemon juice from Malta up to the year 1862; this supply was for the whole Navy, excepting only ships on service in the West Indies which, from 1846, were furnished with juice from Bermuda. The Admiralty medical and victualling records later than 1862 are not kept in the Public Record Office, and, since I had enough information for my immediate purpose, I did not pursue further in the records the question of the exact date at which the change was made to West Indian limes. By 1875 the use of West Indian lime juice had been established in the Navy, and the belief in its superiority is further shown by the fact that it was used in the Merchant Service also as far as it was available; about one-third of the merchant ships were supplied with it, the other two-thirds having to be content with lemon juice.

Between these dates—1862, when Malta lemons were still used in the Navy, and 1875, when limes had superseded them—the Merchant Shipping Amendment Act was passed in 1867. Before that, what was supplied to merchant ships as lemon or lime juice was often grossly adulterated, but the mere fact of having so-called "lime juice" on board (compulsory since 1844) was taken by careless-owners and captains as relieving them of any further responsibility for the care of the health of their crews. This Amendment Act of 1867 enacted that the lime or lemon juice issued must be such as had been approved, fortified, and sealed in the presence of an officer of Customs. And juice was received for examination and sealing only from manufacturers who held licences from the Board of Trade. I suppose that it would be on the introduction of these new regulations that the growing West Indian industry would have an opportunity of securing its position, but I have never exactly verified this supposition, and am at present remote from records. In any case, it was certainly about that time.

A fuller account of some facts in the history of "lime juice" is to be published soon in the *Journal of the Royal Army Medical Corps*.—I am, Sir, yours faithfully,
Jan. 21st, 1919. ALICE HENDERSON SMITH.

HEALTH AND RADIANT HEAT.

In his lecture on Coal and National Health, delivered at the Royal Institute of Public Health on Jan. 15th, Professor W. A. Bone admitted that in the past a great deal of coal had been wasted in domestic grates through our ignorance of the first principles of combustion. The science of clothing as well as that of indoor heating and ventilation largely resolved itself, he said, into a question of aiding the skin in maintaining the normal bodily temperature under varying conditions of work and play without symptoms of discomfort and distress. Dr. Leonard Hill had laid down the conditions of comfort and health to be those prevailing in the open on a balmy summer day, with the ground warm to the feet, the surface of the body exposed on the one side to the radiant heat of the sun and on the other to the cooling breeze which played around the head. No monotony, but a continual change of thermal conditions. The cooling and drying breeze round the head meant that more arterial blood had to pass through the vessels supplying these parts in order to maintain the body temperature, and that far more lymph had to pass through the respiratory membranes to maintain the evaporation required to saturate the dry air. Contrast these conditions with the tropical and monotonous state of the warm, humid air of crowded rooms, heated by steam coils, and it became evident both what we ought to aim

at and what we ought to avoid in our domestic heating and ventilation. The British climate being what it is, we should aim at warm floors and avoid monotony in our physical environment by the use of the open fireplace. Much waste of fuel and personal discomfort were, he said, unnecessarily caused by the prevailing practice of flooding living rooms in the early winter mornings with cold, damp air. Living apartments should at all times be sufficiently ventilated and aired whenever the external atmospheric conditions admitted, but in winter-time "airing" should be confined to the middle part of the day. In the early mornings or on cold raw days it was better to keep windows closed and to allow chimneys to draw in the outside air. The immediate line of practical reform lay in the direction of constructing all fireplaces on scientific principles and in substituting for the raw coal a low-temperature "semi-coke" as soon as this could be produced commercially on a large scale at a reasonable price. For gas fires silent combustion and adequate ventilating effect should be insisted upon. The choice between these two types of heating was, he said, determined not so much upon hygienic grounds as on personal predilection and local conditions.

A WARNING.

To the Editor of THE LANCET.

SIR,—Thefts from motor-cars are on the increase. I have just had a nitrous oxide oxygen outfit stolen from my car, which had been left for 25 minutes outside a shop in New Cavendish-street, and I gather from the police that other thefts occurred on the same day, Jan. 15th. As my box weighed about 60 lb., and only contained stuff of value to an anaesthetist, I imagine that the thief is somewhat disappointed. I send this notice in the hope that others in this neighbourhood may be on their guard.

I am, Sir, yours faithfully.

Up, or Wimpole-street, W., Jan. 18th, 1919. H. EDMUND G. BOYLE.

D. R. H.—No English translation of Nagelschmidt's book on Diathermy has appeared, but we are informed that a work on the subject from the pen of Dr. E. P. Cumberbatch, medical officer in charge of the electrical department of St. Bartholomew's Hospital, will shortly be published by Heinemann.

Communications, Letters, &c., to the Editor have been received from—

- A.—Major G. J. Arnold, R.A.M.C.; Mr. J. E. Adams, Lond.; Mr. J. L. Austin, Sheffield.
B.—Surg.-Capt. P. W. Bassett-Smith, R.N.; Mr. H. Blakeway, Lond.; Dr. H. Brown, Lond.; Capt. H. K. G. Boyle, R.A.M.C., Lond.; Boot's Pure Drug Co., Nottingham; Mr. G. Bethell, Lond.; Battersea General Hospital, Lond., Sec. of; Mr. H. A. Baylis, Lond.; Mr. J. L. Brown, Bombay; Dr. M. E. Barnes, Chhengmal, Siam; Prof. W. M. Baylis, Lond.
C.—Col. S. L. Cummins, A.M.S.; Dr. R. Craik, Lond.; Countess of Dufferin's Fund, Delhi, Joint Sec. of; Dr. H. P. Cholmeley, Forest Row; Mr. R. Clarke, Lond.
D.—Mr. H. Dickinson, Lond.; Mrs. K. Duffy, Jesmond; Dowling Radiant Heat Co., Lond.
E.—Dr. A. Erdos, Nagyvarad, Hungary; Mr. A. Evans, Swansea.
F.—Mr. C. Fitch, Lond.; Dr. A. W. Falconer, Aberdeen; Major E. R. Fothergill, R.A.M.C.; Dr. H. L. Flint, Mansfield.
G.—Capt. P. Gully, R.A.M.C.; Mr. W. Glenister, High Wycombe; Mr. H. E. Girdlestone, Peterfield; Capt. D. Guthrie, R.A.F.
H.—Major F. Hobday, A.V.C.; Lt.-Col. A. F. Hurst, R.A.M.C.; Mr. J. T. Henderson, Pietermaritzburg; Mr. M. Hill.
I.—Insurance Committee for the County of London; Mr. S. T. Irwin, Belfast.
L.—Mr. K. A. Lees, Lond.; Mr. H. J. Langford, Plymouth; Dr. E. Lowy, Lond.; Liverpool Medical Institution, Sec. of.
M.—Dr. H. E. C. K. Murray, Barley; Metropolitan Asylums Board, Lond.; Mr. J. Y. W. MacAlister, Lond.; Dr. J. P. McBride, Edinburgh; Dr. J. Maberly, Woodstock, Cape Prov.
N.—North London Medical-Chirurgical Society, Hon. Sec. of; Major G. E. Newlin, R.N.C.; *National Medical Journal*, Lond.
O.—Oliver-Pell Electric and Manufacturing Co., Lond.; Capt. S. A. Owen, R.A.M.C.
P.—Mrs. A. Pratt, Lond.; Panel Committee for the County of London; Mr. B. D. Perley, Lond.; Dr. B. Pritchard, Lond.; Dr. F. J. Poynton, Lond.; Rt. Hon. Lord Parmoor, Lond.
R.—Dr. C. Riviere, Lond.; Royal Statistical Society, Lond.; Mr. C. B. Richards, Bridge-Mallan; Royal Institution of Great Britain, Lond.; Royal Medical Benevolent Fund, Lond., Sec. of; Dr. W. B. Russell, Colwyn Bay; Mr. S. C. Ranner, Lond.; Royal Society, Lond.; Royal Society of Arts, Lond.
S.—Prof. J. W. W. Stephens, Liverpool; Dr. L. Stamm, Lond.; Capt. A. G. Shera, R.A.M.C.; Dr. B. Solomons, Dublin; Col. A. W. Sheen, A.M.S.; Scottish Poor-law Medical Officers' Association, Lond.; Dr. G. H. Shuttleworth, Lond.
T.—Capt. A. J. Turner, R.A.M.C.; Sir John Tweedy, Lond.; Capt. D. Thomson, R.A.M.C.; Dr. J. Tatham, Oxford; Dr. A. H. Thompson, Lond.; Capt. A. J. Turner, R.A.M.C.; Dr. D. Turner, Edinburgh.
W.—Wallace Automatic Disinfecting and Deodorising Co., Lond.; Sir Kingsley Wood, M.P., L.C.C., Lond.; Sir William Hale White, Lond.; Mr. J. Wallace, Bombay; Dr. D. P. D. Wilkie, Edinburgh; Dr. A. Wylie, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2



MEDICAL UNANIMITY AND PUBLIC SPIRIT:

THE STATE AND THE DOCTOR.

By SIR HENRY MORRIS, BART., M.A.,

PAST PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND
AND OF THE ROYAL SOCIETY OF MEDICINE OF LONDON.

MY object in publishing the following remarks is to try to induce those who do me the honour to read them to endeavour to promote unanimity between the several sections of the profession with the view to secure (1) satisfactory State and municipal conditions in the National and Municipal Health Service; (2) fuller recognition by the public and the Government of the importance of medical opinion and advice; (3) union of the voices of the profession when legislation is in prospect on questions which gravely concern the mental, physical, and social welfare of the people; and (4) a larger representation of the profession in Parliament and an organised medical party in the House of Commons as a step towards the attainment of these ends.

The systematic fight against disease and the combining of preventive medicine with clinical and curative medicine is becoming yearly more and more a Government function. The medical profession, however, has got to recognise that sanitary matters are among the most important matters of State policy, and that it cannot any longer turn its back on "politics," as hitherto it has always somewhat contemptuously done, but that, on the contrary, so far as medical "politics" go, the profession ought to take quite the leading rôle.

LEGISLATION AFFECTING THE MEDICAL PROFESSION.

Within the last 45 years Parliament has imposed a large number of statutory demands upon the time and service of the medical profession. Under the powers conferred by numerous Acts of Parliament passed since 1871 the general practitioner is liable to be called upon to undertake a great variety of duties concerning and ranging over the whole period of the life of a man, from his cradle to his grave, and extending even beyond to the removal and disposal of his body after death.

The doctors' liabilities under these Acts concern the state of mind and body of men, women, and children, the condition of their property, houses, and tenements, their environment and fitness during school life, their protection against the infinitely small and the abominably loathsome pests which attack their bodies and assault their health, the nuisances about their dwellings, the dangers of their trades and occupations, the workmen's compensation for injuries and their superannuation and pension claims, and a score of other matters, besides the National Insurance Act of 1911, under which 14 millions of persons are eligible for medical care.

And all these Acts of Parliament exacting service from the medical practitioner have been passed by non-medical legislators, some few of the prime movers in which were no doubt prompted and instructed by medical men, but the bulk of whom neither knew nor took the trouble to ascertain the opinion of the general practitioners who are the agents by whom the Acts are mainly made effective.

INADEQUATE REPRESENTATION OF MEDICINE IN PARLIAMENT.

Yet during the whole period of this exploitation of the profession by Parliament the profession has been docile and servile, has done nothing, beyond the British Medical Association, towards becoming an important factor influencing legislation, and remains to this day without any recognised political standing in the State.

As a result of the recent General Election the profession is slightly better in the number of representatives in Parliament than it was before. Out of 37 medical candidates for Parliamentary seats, 16 were successful; but as 5 of the elected are Sinn Féiners, there will, in all probability, be only 11 who will take their seats in the House of Commons, as

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against 9 in the last Parliament. Compare these figures with the 92 members of the legal profession (solicitors and barristers) who were elected—67 for England and Wales, 11 for Scotland, 11 for Ireland, 2 for English universities, and one for Trinity College, Dublin. Add to these election results the numerous important well-paid public and political offices which lawyers occupy, and the fact that there are at the present time five ex-Lord Chancellors (one of whom, it is true, is an M.D. of Edinburgh, but he very early in life forsook medicine for law), each in receipt of £5000 a year pension, and a sixth just appointed at the age of 46, with a prospect of long years of a pension after ceasing to receive while in office as Lord Chancellor £10,000 a year—and we get some idea of the comparative advantages and public recognition of the two professions.

MEDICINE AND THE STATE.

This lack of proper State recognition, and of an adequate Parliamentary representation of medicine, is largely due to its self-imposed seclusion from affairs of State, to the reluctance of the profession to take its part in any great national scheme, and its persistent resolve to continue as long as possible as an individualistic class.

This disposition is a legacy from the traditions and prejudices of the priest-physicians of antiquity, and the monastic influences of the Middle Ages; for, notwithstanding the medical treatment of patients in the "Asclepeia"—the ancient Greek equivalent of our modern hospitals—and the efforts of Hippocrates to dissociate medicine from priestcraft and its many superstitious devices, and to break the long-standing and confused connexion between philosophy and medicine, professional individualism has been perpetuated by the devout inculcation throughout the ages of the Hippocratic "Oath" and "Law."

It is to-day, however, becoming apparent to many of the profession, as well as to the public, that the old individualistic character of medical practice is incompatible with modern requirements and must be supplemented by a much wider view of the place which medicine is called upon to occupy in the State; and that in the interest of the community this aloofness of the profession from every movement of a political character can no longer be maintained.

There are two principal reasons for this change of view, one special to the profession, the other a product of the socialistic tendency of democratic administration.

Scientific Development of Medicine.

The first is based upon the constant developments of modern science and the progressive adaptation of scientific discoveries to the practice of medicine and surgery in relation both to diagnosis and treatment.

Whilst this adaptability of many sciences to medical diagnosis and treatment renders necessary a more extended and varied application of medical resources to the Public Health Service it also necessitates the coördination of expert experiences and the coöperation of specialists and general medical practitioners for the efficient up-to-date treatment of private patients.

In the life of a nation, as Karl Marx forcibly pointed out in connexion with the growth of revolutions, the material forces of production at certain stages of development come more and more into conflict with the existing relations of production, or in other words with the relations of private property. In the same way the development of medical and scientific knowledge brings into use improved material means of investigating and treating disease which are incompatible with the old exclusively personal relations between doctor and patient.

As the material forces of industrial production were improved the spinning-wheel, the weaver's handloom, and the private workshop were superseded by the spinning-jenny, the weaver's mechanical loom, and the factory. So in the progress of science the individualism of consulting-room and bedside practice has had to yield to research work in bacteriological and biochemical laboratories, to radiography and other light and electrical processes, and other expert specialities.

As a consequence, the individual services of the family doctor have to a large extent given place to the associated services of a number of medical scientists, and the curative results of treatment in a large proportion of cases are the product of this coöperation—just as the yarn and the fabrics which come from the factories are the outcome of the labour

of many workmen, and not, like the commodities of former times, the single-handed products of individual artisans.

The Medical Profession and the Community.

The second of the reasons for the change of view referred to is the natural democratic doctrine that the community does not exist for the benefit of professions or vocations; that neither do the professions exist for the benefit of individuals only, but that the proper function of each profession is to render such services as are special to it for the benefit of every section of the community and not for those persons only who can afford to obtain them by payment.

The object of professional organisations in a democratic or socialistic State, it is held, ought, in fact, to be to promote the greatest good of the greatest number. This is the spirit of the National Insurance Act, and when wrongly interpreted it is the spirit which exploits the profession for the benefit of the mass of the people without any regard for the dignity and prestige of an ancient, honourable, and learned calling.

RECONSTRUCTION: NATIONAL HEALTH SERVICES.

It follows from the progress of medical science and this conception of the communal services of the professions that there are in prospect, and within the purview of post-war reconstruction, changes, expansions, and, it is to be hoped, improvements in the National Insurance Act, whereby arrangements will be made for bringing modern and highly specialised remedies and means of diagnosis within the reach of the poorer classes, so that the patients of all general practitioners and panel doctors may have the same advantage from improvements in the medical sciences as the rich and well-to-do classes have.

It is to be desired that this will be brought about without interfering with the patient's free choice of doctor, or debarring medical men from attendance on their own patients, or depriving independent general practitioners and consultants of their freedom to render professional services to any persons who desire them, whether those persons are under the National Insurance Act or otherwise.

But it must be realised that a considerable increase in the number of whole- and part-time salaried doctors will be required to cope with the increasing volume of public health work, and that, in view of such increase, steps ought to be taken to make it possible for the ordinary general practitioners to bring their distinctive opinions to bear on the authorities concerning any schemes affecting the National Health Services, as well as to make known their views about the State Clinical Service.

THE TEACHING OF PREVENTIVE MEDICINE.

An outcry is being raised in a certain quarter against the "strange neglect" of teaching preventive medicine and public health in the medical schools of this country, about the necessity of every medical student being as well equipped in all the problems of hygiene as in clinical medicine, and in favour of every medical practitioner being trained to form an integral part of any scheme of preventive medicine in the district in which he practises. To this end a most formidable array of subjects and details of subjects is set forth as necessarily to be included in the ordinary course of instruction given to every medical student.

I am entirely opposed to the views of those theorists and idealists who would still further weigh down the already greatly overtaxed medical student by insisting on his studying during his five years curriculum all that is known by experts concerning personal and public health; who would introduce a mass of "field work" as well as courses of lectures into the ordinary medical student's career; and who deplore the fact that these students before they leave the schools to enter into practice are without a knowledge of such items as the local arrangements of Poor-law treatment, the practical operation of the Midwives Act, every detail of factory hygiene, of the sanitary machinery for dealing with tuberculosis in the district in which they are going to live, and of the numerous instruments and agencies provided by the State for the alleviation of an artisan's family in the event of sickness.

This exorbitant demand on student study reminds one of Francis Bacon, three centuries ago, aiming at the acquisition of a knowledge of all that was known or knowable in his day; or of Rabelais' fable of Gargantua urging his giant son Pantagruel to defend, successfully against all comers, in the crossways of the city, no less than 9764 theses, and then

to return home to receive blessing before his giant father died.

I know of no criticism more misleading for the layman, more unfair to medical teachers, and so unappreciative of their ever-increasing, self-sacrificing, unaided, and well-nigh hopeless efforts to keep medical education level with the knowledge of the day, as that on page 12 of Sir George Newman's Memorandum on Medical Education in England, addressed to the President of the Board of Education. His remarks on the disparity between the growth of medical education and the growth of medicine would, I feel sure, have been tempered by some extenuating reasons had the author reflected for a moment that there is a limit to the mental receptivity within a given period of even the most brilliant students, and that it is impossible to compress the contents of a big and overcrowded store-room into the dimensions, say, of a table drawer of ordinary capacity.

But in spite of the inevitable limitations of the five years curriculum and of the shortcomings in the medical student's education on which so much stress is laid, the young practitioner, with such scanty knowledge as he has picked up at his medical school, soon learns by experience in the working of a practice what is expected and actually required of him; and, with the exception of those who have undergone special training to fit them for holding public health appointments, he knows a great deal better than consultants, and members of college councils, and university faculties, how to carry out the practical details of preventive medicine.

REPRESENTATION OF VIEWS OF GENERAL PRACTITIONERS.

But, be this as it may, it is essential for the smooth and efficient administration of any State Medical Service that the voice of the great body of general practitioners should be heard and more readily listened to in future than has been the case in the past. It is but reasonable that they should have ample opportunity to make their views known about the terms and conditions under which their own services in future are to be rendered. It is as much, or more, in the interest of the State as in that of the medical profession itself that these terms and conditions should be based upon a sound, satisfactory, and honourable footing. It is also very desirable for the successful working of any national scheme relating to the medical care of the poor, to health insurance, preventive medicine, and local sanitary measures, as well as for the satisfactory enactment of medico-political reforms, that there should be a clear understanding and well-directed co-operation between the general practitioners all over the country and the Members of Parliament and other laymen who take a genuine interest in the national struggle against disease. This is, however, not likely to be the case unless the views of the mass of the profession can, somehow, be brought into continuous and uncensored touch with Parliament, with the Health Minister, and, if desired, with the heads of other departments of Government.

The practice which has hitherto prevailed, in so far as the Government has sought the advice or guidance of any medical men at all other than those in the central government employ, has been to consult the Presidents or Councils of the Royal Colleges, the General Medical Council, and the so-called heads of the profession. This plan, however, has not given general satisfaction in the profession; and on this point I should like to make a few remarks. It is unreasonable, indeed senseless, to pour out vials of wrath and columns of contemptuous abuse on those institutions, as the manner of some is to do. The Royal College of Surgeons of England, for example, has been frequently condemned because it will not dissipate a part of its income in a costly annual ballot by post of its many thousands of members, and will not comply with the demands of an infinitely little band of agitators who clamour for votes and seats in the Council so that they may have the use of the College funds to improve their status and pursue their claims to what they choose to call their professional rights. Such agitations if successful would destroy the usefulness of the College, and as it is they stir up, or tend to stir up, ill feeling in the profession against that great and honourable corporation.

The General Medical Council is from time to time reproached, reprovied, and belittled because it will not infringe the Acts of Parliament and its standing orders by putting upon the Medical Register some skilful and popular but non-qualified "surgical manipulator," or by restoring to the

Register the names of doctors who continue to associate themselves in the treatment of patients with persons other than legally qualified medical men.

THE ROYAL COLLEGES AND GENERAL MEDICAL COUNCIL.

The Colleges and the General Medical Council have very important public and professional duties to discharge. The Royal Colleges, for generations before the Universities took any part in the education of the general practitioners, or the passing of the Medical Acts which established the Medical Council as the authority in medical education and registration for the United Kingdom, were the pioneer directors of medical education and examination of the great bulk of the medical practitioners of the country and its public services. They took an early, and have ever since taken an active and important part in providing for research work. They have valuable libraries and museums and lectureships to guard and maintain, which are accessible to any member of the profession and available for the use of general visitors on application. The Museum of the Royal College of Surgeons of England is unequalled in the world for the importance, the variety, and the extent of its collections. Upon these and upon the buildings which contain them £163,000 have been spent, of which the British Government has provided £57,000 and the College of Surgeons £106,000. But this large sum gives a very inadequate idea of what the College has expended in adding to and in the preservation of the contents of the museum. The superintendence of the museum is confided by the Council to a committee of its own members, who are responsible to it and to a body of trustees, some of whom are appointed by the Government and others by the College.

The General Medical Council, besides controlling the discipline of the profession and the medical education and registration of the United Kingdom, coördinates the education and examinations in the dominions, colonies, and elsewhere, where reciprocity of registration is desired; and from time to time urges upon the Privy Council the need for legislation concerning medical and dental practice. Then there are the Royal Society of Medicine, the Medical Society of London, and other similar societies in London and the great cities of the United Kingdom whose function is the reading and discussion of papers and the interchange of opinions on medical and surgical subjects and the collateral sciences.

But while recognising the very important functions of the General Medical Council, of the Royal Colleges, and of the learned medical societies, and while not in the least degree disparaging or depreciating the admirable manner in which those bodies discharge their functions, and without attempting to dispute the wisdom of their own methods of administration or control, there is no denying that the Royal Colleges and the medical societies are not the best qualified bodies to give advice on most subjects of national and local medical administration. They lack that intimate acquaintance with the conditions of life amongst the great masses of the people, either in urban or agricultural districts, which the general practitioners possess. Nor do these institutions act wisely and in the best interests of the nation by refusing to coöperate in honest, disinterested efforts to found an independent consultative and advisory board to keep watch over all matters concerning medical legislation.

SUGGESTED SCHEME.

What is wanted now, and will be none the less needed after the setting up of a Ministry of Health, with its advisory committee composed of salaried and State-appointed members, is a committee composed of unpaid and unofficial delegates representing all the various sections and corporations of the profession. These delegates might be elected either at a general meeting open to the whole profession, or by ballot conducted through the post, or, if local or branch committees are established throughout the country, by the election by these local committees of their own delegate or delegates. These representatives would bring together the knowledge and experience of their several sections and institutions. The function of this committee would be to coördinate, coöperate, criticise, and confer, but would have no executive power. The committee should be privileged, however, to present reports containing their considered opinions and conclusions to the Health Minister, to the Prime Minister, or to Parliament direct.

At present no such body exists. The British Medical Association is the nearest approach to it. But it was not

founded to exercise, and does not profess that it exercises exclusively, or as its principal object, any such function; nor does it embrace more than one-half of the profession; and, whether rightly or wrongly, it is very generally considered to be engaged in directing its efforts at least as much, if not more, in advancing the personal and collective professional interests of its members as in safeguarding and promoting national objects.

THE MEDICAL PARLIAMENTARY COMMITTEE.

It was partly with the view of ultimately setting on foot such a committee as I have just outlined that a large meeting, open to the whole medical profession, was held in Steinway Hall on Oct. 1st, 1918. It was hoped that the profession would become alive to the fact that it is the duty of every medical man to further any medical policy for the benefit of the community, and to join in any scheme for employing the full powers of medical and sanitary science to add to the general efficiency of the State.

It was foreseen that for this purpose the unanimous coöperation of the profession is essential. It was urged that in order that the matured views of responsible medical men might be adequately brought to the notice of the public there ought to be a larger number of medical men in the House of Commons. With these ends in view a committee was there and then elected, with power to add to its numbers. This committee is now known as the "Medical Parliamentary Committee." Its composition makes it representative of consultants, general practitioners, and many medical organisations. But the Royal Colleges, and the Royal Society of Medicine, and the Medical Society of London, so far, stand aloof. It is to be hoped that in time all these bodies will come into line, and that the "Medical Parliamentary Committee" will represent every section and every organisation of the profession, with branch committees keeping in touch with provincial and county councils, and local sanitary authorities throughout the Kingdom.

SUMMARY.

The points I have endeavoured to bring out in this article are the following:—

1. That there is not, and never has been in this country, what is very badly wanted—namely, a Medical Federation such as the recently constituted Medical Parliamentary Committee aims at becoming, the primary or exclusive objects of which should be to bring to the notice of Parliament and the nation the importance of medical knowledge and medical service in advancing the good of the State, the proper sanitation of its villages, towns, and cities, the virility of its manhood, and the general health of its people; to instruct the legislature and the public as to how this knowledge is to be applied and this service rendered with the utmost efficiency; to criticise proposals, to offer advice, and to give practical assistance in regard to measures having relation to the particular functions of the profession, when under consideration with a legislative or administrative object; and to offer suggestions and advice as to reforms which from time to time may be needed to keep the standard of public service on a level with progressive medical science. The Medical Federation, in fact, should be an unattached advisory board to the Minister of Health and his official advisory committee, without any independent executive power, but having a recognised moral, if not a statutory right to be consulted on all measures or changes affecting the medical and sanitary services of the State, and with the privilege of making uncensored reports, when necessary, direct to Parliament or to the Prime Minister.

2. That before such Medical Federation can be set up the existing tendency to professional segregation, or self-imposed isolation, and individualism, and the deeply rooted professional prejudice against taking part in any public movement whatever of a political character must be greatly modified if not abandoned.

3. That the progress of science, the development and extension of medical knowledge, and the socialistic demands of modern democracy make such a change in the outlook and relations of the medical profession necessary—and, indeed, essential as being conducive to the commonweal.

4. That the Medical Federation here suggested need not, and, indeed, cannot, and ought not to attempt to interfere with or to be in any way mixed up with the ordinary and special functions of existing corporate bodies and institutions;

though it deserves to have the encouragement, good will, coöperation, and material assistance of all of them.

5. That the Medical Federation, or Medical Parliamentary Committee, ought not to concern itself with functions such as those exercised by the British Medical Association. It should have nothing of the nature of a trade union. It should not be looking after and promoting, by Parliamentary and other committees, the interests of its members, or insuring their lives, or laying down and enforcing the terms of medical appointments, or attempting to direct the ethics of the profession. And though its membership would be medical and scientific it should not be what is commonly understood by the term "a scientific society." It therefore should not, like the Royal Society of Medicine and other kindred societies, direct its energies to the advancement and development of the science and art of medicine, or to discussing unsettled questions relating to new discoveries or methods. It should, in fact, be a political association with its sphere of "politics" strictly confined to the promotion, improvement, and authoritative criticism of, and to expressing its matured responsible judgments and its deliberate unified conclusions upon, those matters as to which it ought to be both the duty and the privilege of the profession to give counsel and render service for the benefit of the community at large. It should substitute for the sporadically and occasionally sought opinion of college councils and the so-called heads or leaders of the profession the opinion of the main body of the profession, as being the regular recognised source of instruction and guidance for Ministers, Parliament, and the public.

6. The Medical Federation should be thoroughly representative of the Royal Colleges, the medical societies, the British Medical Association (whose coöperation, detached from its other functions and spheres of usefulness would be of the utmost help and importance), and very especially of the general practitioners throughout the kingdom, whose delegates should be nominated exclusively by themselves.

7. For its success, unity in the profession, and on the part of the federation itself, moderation and restraint of differences in its consultative procedures, and suppression of discordant voices and actions in its public utterances and activities are requisite; and when successfully established the Federation, or Medical Parliamentary Committee, should encourage the formation of branches, or local advisory committees of a precisely similar character, and exercising a similar guiding, suggesting, and persuasive influence over the county and borough councils in their respective neighbourhoods, as the parent association should aim at exercising over the nation and the legislature.

SIGNIFICANCE OF AN INVERTED "T" IN THE FIRST LEAD OF THE CARDIOGRAM.

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THE inversion of T in electrograms in the third lead has no particular significance; in the second it is a sign of a grave myocardial condition. The information obtainable in electrocardiographic literature in regard to the meaning of inverted T in lead I. is very meagre. The table below is made up from records of out-patients attending a general medical department. An electro-cardiogram was taken from those cases who complained of dyspnoea on exertion, fainting fits, oedema, without showing any obvious causes accounting for the symptoms. However, a number of cases of valvular disease are contained in the table.

T in I. lead inverted in all these cases. An inversion of T in the I. lead is often found in cases who are under the influence of digitalis.¹ Cases who were complaining of dyspnoea, &c., did not always show an inversion of T. On the other hand, all those cases who showed an inversion of T in the first lead have invariably shown one or more symptoms usually associated with defective heart action. The conclusion is that an inverted T in the first lead is a reliable sign of a damaged heart muscle.

I am indebted to the Medical Board, Northern Hospital, for permission to use material in connexion with this note.

Table of 40 Medical Out-patients in whom an Electrogram was taken. The last column records the inversion or not of the first lead.

| | Age | Previous history. | Symptoms. | Heart sounds. | Murmurs. | T. |
|----|------|---|--|---|-------------------------|------|
| 1 | M 24 | Scarlet fever. Pneumonia. Rheum. fever. | D.b.e. | M.I. and II. acc. II. Pulm. acc. | M. Presys. | Inv. |
| | 17 | No history. | " | M.I. rough. II. Pulm. acc. | M. Systolic. | Nor. |
| 3 | R 13 | " | Oedema of feet. | No alteration. | Systolic murmur. | " |
| 4 | W 25 | " | Pain in cardiac region. F.f. | All sounds slightly acc. | None. | " |
| 5 | B 29 | Rheum. fever. | D.b.e. Oedema. | Heart sounds rather soft. | " | " |
| 6 | C 46 | " | D.b.e. | Sounds peculiarly loud. | " | Inv. |
| 7 | W 25 | " | D.b. | M.I. duplicated. II. Pulm. acc. | M. Systolic. | Nor. |
| 8 | W 23 | " | D.b.e. | II. Pulm. acc. | Presys. | " |
| 9 | B 17 | Scarlet fever. Appendicitis. | D.b.e. Dizziness. | Normal. | None. | Inv. |
| 10 | F 13 | Some kind of fever. | F.f. | A. sounds acc. | " | " |
| 11 | S 16 | Chorea. | D.b. | Short and snappy. | M. Presys. | Nor. |
| 12 | S 20 | T.B. in sputum. | " | Normal. | None. | " |
| 13 | C 17 | No history. | Pain in cardiac region. F.f. | " | " | Inv. |
| 14 | M 14 | Rheumatic fever. Scarlet fever. | " | " | " | Nor. |
| 15 | A 17 | Scarlet fever. Rheumatism. | D.b.e. | " | " | Inv. |
| 16 | D 63 | No history. | " | All sounds soft. I. A. acc. II. A. acc. | " | " |
| 17 | E 55 | Specific. | F.f. | A. I. & II. acc. Pulm. II. acc. M. I. acc. A. II. acc. | A. systolic and presys. | " |
| 18 | B 37 | " | D.b., &c. | " | None. | Nor. |
| 19 | D 27 | No history. | Irritable heart. F.f. D.b. Pain in cardiac region. Unable to do much work. | Normal. | " | Inv. |
| 20 | H 26 | " | " | " | " | " |
| 21 | C 11 | " | D.b.e. Pain in cardiac region. F.f. | A. II. acc. M. II. acc. A. II. acc. | " | Nor. |
| 22 | T 29 | " | " | " | " | Inv. |
| 23 | M 19 | " | F.f. | M. I. acc. A. II. acc. | " | Nor. |
| 24 | W 57 | " | D.b.e. | Alteration in I.M. | " | " |
| 25 | R 33 | " | Fainting. | A. II. acc. II. pulm. acc. | M. systolic. | Inv. |
| 26 | W 32 | " | D.b.e. Fits. Pain in cardiac region. F.f. | Normal. | None. | Nor. |
| 27 | P 45 | After lifting a heavy parcel felt faint. | " | M. I. duplicated. II. Pulm. acc. All sounds loud-pitched. Normal. | " | " |
| 28 | W 19 | No history. | D.b.e. | II. Pulm. acc. | M. systolic. | " |
| 29 | R 11 | Congenital syph. | D.b. | " | " | " |
| 30 | S 29 | Rheumatic fever. | " | Oedema. | M. II. soft. | " |
| 31 | C 27 | No history. | D.b.e. | II. Pulm. slightly acc. II. M. acc. | None. | " |
| 32 | M 19 | " | F.f. | All sounds altered. | " | Inv. |
| 33 | K 36 | T.B. pulm. | D.b.e. | " | " | Nor. |
| 34 | N 56 | No history. | D.b.e.; F.f. | Normal. | " | " |
| 35 | M 15 | Rheumatic fever. | D.b. | II. Pulm. acc. I. and II. M. altered. I. M. prolonged. M. I. rough. II. duplicated. II. Pulm. acc. II. M. duplicated. | Presys. Systolic. | " |
| 36 | S 44 | Nephritis. | " | " | Systolic M. | Inv. |
| 37 | W 19 | Rheumatic fever. | D.b.e. | " | " | Nor. |
| 38 | S 47 | No history. | " | Normal. | None. | Inv. |
| 39 | C 47 | X ray report showed mediastinal growth. Chronic bronchitis. | D.b. | " | " | " |
| 40 | K 20 | " | Dizziness. | " | " | Nor. |

D.b., Difficulty in breathing. D.b.e., Ditto on exertion. F.f., Fainting fits. Inv., Inverted. Nor., Normal.

¹ THE LANCET 1918, i., 464.

PRELIMINARY REPORT ON
THE PRESENCE OF A FILTER-PASSING
VIRUS IN CERTAIN DISEASES,

WITH ESPECIAL REFERENCE TO TRENCH FEVER,
INFLUENZA AND NEPHRITIS.

BY MAJOR-GENERAL SIR JOHN ROSE BRADFORD, A.M.S.;
CAPTAIN E. F. BASHFORD,* R.A.M.C.;

AND

CAPTAIN J. A. WILSON, R.A.M.C.

(A Report presented to the Director-General Medical Services,
British Armies in France.)

DURING the autumn of 1917, and the spring and summer of 1918, observations were carried out by us on the pathology of acute infective polyneuritis. These resulted in the detection, isolation, and culture by the Noguchi method, of an organism that reproduced the malady when inoculated into animals, and further, this organism was recovered by culture from such experimental animals. The details of this work will be published in the forthcoming number of the *Quarterly Journal of Medicine* and therefore need not be considered here. The causative organism of polyneuritis belongs to the group known as "filter-passers," in that the virus will pass through certain filters, although it is not a filter-passer in the sense that some other organisms are, as it does not pass through certain filters with very fine pores.

The satisfactory results obtained in the study of polyneuritis led naturally to the same method that had proved so successful with this disease being applied to other diseases where there was either evidence or suspicion that the causative agent was a filter-passer. A considerable number of such diseases have been investigated on these lines during the last six months in the laboratories attached to certain hospitals in the Etaples area.

Captain J. A. Wilson conducted the whole of the bacteriological portion of these inquiries in the laboratory of No. 20 General Hospital. Further, the observations on trench fever mentioned below were all made in this hospital, and Major Frank Clayton, R.A.M.C., had charge of the clinical observations on the volunteers inoculated with the virus of trench fever.

Captain Peacock controlled the whole of the entomological part of the inquiry, and more especially the provision of clean lice to control observations on infected lice.

The experimental work on animals and the histological work on the lesions so produced has been carried out by Captain Bashford in the special laboratory attached to the Observation Hut at No. 26 General Hospital. The present report is merely a preliminary statement as to certain results achieved, the full details, clinical, experimental, and histological, will be published later.

Trench fever was one of the first diseases examined at the suggestion of Captain Wilson. Other observers have adduced evidence showing that the virus of this disease belonged to the group of filter-passers.

Trench fever.—The virus isolated in trench fever consists of minute coccus-like bodies, grouped in pairs, with the opposing surfaces flattened, and varying in size from 0.3μ to 0.5μ . It is Gram-positive and stains readily if the film preparations are washed in ether before the stain is applied. It passes through Berkefeld N. and V. filters, and also through Masson porcelain filters, and can be cultivated from such filtrates. It resists heating to a temperature of 56°C . for 30 minutes, and it is an anaerobe.

This organism has been recovered by culture from the blood in 11 out of 15 cases of trench fever examined during the pyretic stage, and in 3 out of 8 cases examined when apyretic. It was not found in over 40 control cases where blood culture with the same technique was carried out.

A similar organism was recovered from four separate supplies of infected louse excreta kindly supplied to us by Sir David Bruce.

It was not found in 31 specimens of excreta from batches of clean lice.

The culture obtained either from the blood of man or from louse excreta, when inoculated by scarification into

man, produces a mild illness, and the organism can be recovered from the blood by culture during such illness, and also from clean lice fed on the patient during the illness.

Influenza.—The virus isolated in cases of influenza consists of very minute rounded coccus-like bodies, varying from 0.15μ to 0.5μ . It is Gram-positive, and passes through Berkefeld N. and V. filters and Masson porcelain filter. It is an anaerobe, and resists heating to 56°C . for 30 minutes.

It has been isolated by culture from the blood in 6 out of 9 cases examined, from the sputum in 6 out of 6 examined, from pleural fluid in 4 out of 4 examined, and from the cerebro-spinal fluid in the only case so examined. It has also been isolated from the lymphatic glands post mortem in the only two cases examined. This organism can not only be grown from the blood, and from exudates, but it can also be seen in stained films prepared from exudates—e.g., sputum, pleural fluid, cerebro-spinal fluid.

The culture (second generation) when inoculated into animals subdurally, or intravenously, produces illness in guinea-pigs and monkeys, and on post-mortem examination the following lesions have been found: extensive lobular pneumonia with hæmorrhages, some nephritis, myocardial and hepatic lesions, such as extreme congestion, interstitial hæmorrhages of small size, and fatty degeneration. Passage experiments done from such animals when slightly ill, by injecting their blood, bile, &c., into healthy animals, causes in these more severe and even fatal illness, and post mortem the same lesions are found. The organism has been recovered by culture from the tissues of such experimental animals.

Nephritis.—Up to the present time (January, 1919) only one variety of nephritis has been investigated—i.e., that characterised by the presence of pyrexia and hæmaturia at the onset.

The virus isolated in such cases of nephritis consists of a round coccus-like body varying from 0.3μ to 0.6μ in size, and in culture often occurring in the form of short chains of four individuals. The same organism may be seen in urinary sediments either singly or in pairs. It is Gram-positive and passes through Berkefeld N. and V. filters, and also through the Masson porcelain filter. It is an anaerobe and resists heating to 56°C . for 30 minutes.

It has been isolated from the blood in 6 out of 9 cases examined and from the urine in 7 cases. The culture (second generation) when inoculated into animals produces nephritis in monkeys and guinea-pigs. In monkeys this can be determined not only by post-mortem examination, but also clinically, since the urine contains blood, albumin, and casts. In both guinea-pigs and monkeys extensive lesions, glomerular and tubular, are found on microscopic examination. In severe cases pulmonary lesions are also present.

The organism has been recovered by culture from the tissues of the animals experimentally inoculated.

These three diseases are those that have been most studied as yet, but organisms of the same group, although differing from one another, have been recovered by culture in a number of other diseases of obscure etiology. In most of these no adequate experimental work has been possible up to the present, and in others it is incomplete owing to insufficient time having elapsed to establish results with certainty. Amongst the more important diseases where true "filter-passing" organisms have been isolated by culture from the blood and seen in suitably stained films mumps, measles, rose measles, and typhus, may be mentioned. In mumps four cases have been examined, and all gave the same positive result. Two cases of typhus have been examined, but as yet it has only been possible to get material from one each of measles and rose measles.

An organism allied apparently to that of polyneuritis has been isolated from brain tissue in cases of encephalitis lethargica, both from material obtained from England and also from cases observed in the Army in France. A considerable amount of histological work has been done on the lesions present in animals (monkeys) successfully inoculated with these cultures. These results will be published later.

If the organisms found in polyneuritis and encephalitis are excluded, all the others have many points in common and possibly belong to one group. Although exceedingly small, they present individual differences in their morphology, and in their mode of growth in culture. These details must be reserved for fuller and later publication.

Etaples, Jan. 21st, 1919.

* Captain Bashford took no part in the portion of this work dealing with trench fever.

A STUDY OF THE SUSPENSION TREATMENT OF FRACTURES OF THE THIGH.

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CH. B. EDIN.,

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AT the moment of writing several thousand cases of gunshot fracture of the thigh are under treatment in our hospitals. Some have been recently wounded, most have passed the critical septic stage, all have still to regain in a greater or less degree the proper functional use of their limbs.

Our ideals have been to eliminate sepsis by early radical operative procedures, to aim at rapid and complete repair of bone, and to secure unrestricted movement of all joints with the best possible nutrition of the limb. The ultimate functional efficiency of the limb will depend largely upon the severity of the lesion, the type and the degree of the infection, and the coefficient of recuperative power, especially with regard to bone. Those cases where, as a result of these factors, union is long delayed will naturally present the most difficulty, for the limb must, in such cases, be subjected for the longest periods to fixation and extension with detrimental results. The muscles of the thigh may become indurated with inflammatory products, bound up in callus or adherent to scar tissue. The tissues in and around the knee-joint may undergo definite pathological changes resulting in impairment of function, the restoration of which superimposes upon the treatment of the fracture, a tedious and difficult process.

Hostilities have ceased, but our task is but half accomplished. It must be admitted that at least one of the questions we have to face is the problem of delayed union. The percentage of such cases is unavoidably high, and the treatment must be a protracted one. Bone-grafting opens up a new field here, but our real difficulty will lie in conserving nutrition and movements, in maintaining equality of length and natural alignment during the intervening months. This being the case, the writer may be pardoned for treading upon ground which, after four years of war, may rightly be regarded as well explored.

A Résumé of Principles and Methods.

In our treatment to-day of fractured femurs there are broadly two principles involved, associated with two divergent methods. The first, associated with Thomas and the Thomas splint, is that of complete reduction, *ab initio*, and immediate and continuous fixation. The second, associated with the methods of suspension and the employment of weights and pulleys, is that of gradual reduction. Both employ axial traction on the limb. Both aim at complete muscle fatigue.

In the former muscle fatigue is obtained by a concentrated process by which the muscular resistance is overwhelmed, the displaced bones reduced to position, and the results gained rigidly maintained from the beginning. This process is ushered in by deep general anaesthesia or by spinal anaesthesia, ensuring absolute flaccidity of the muscles involved, which are never permitted to resume their deforming action on the fragments. Reducing and counter-reducing forces are concentrated upon the limb by the ingenious mechanism of the Thomas splint. Muscular contraction, while it lasts, acts against two rigidly fixed points—namely, the tuber ischii and the distal end of the splint.

In the second method a superstructure is necessary, which is solid, which may lie upon the bed, be built up from it,

surround or surmount it. The simplest type may be found in the wire cradle splint of Hey Groves, and the most complex in the Gassette frame with travelling overhead gear, multiple uprights and crossbars, and a multiplicity of cords, pulleys, and weights. The commonest type is, perhaps, a modification of the well-known Hodgen splint.

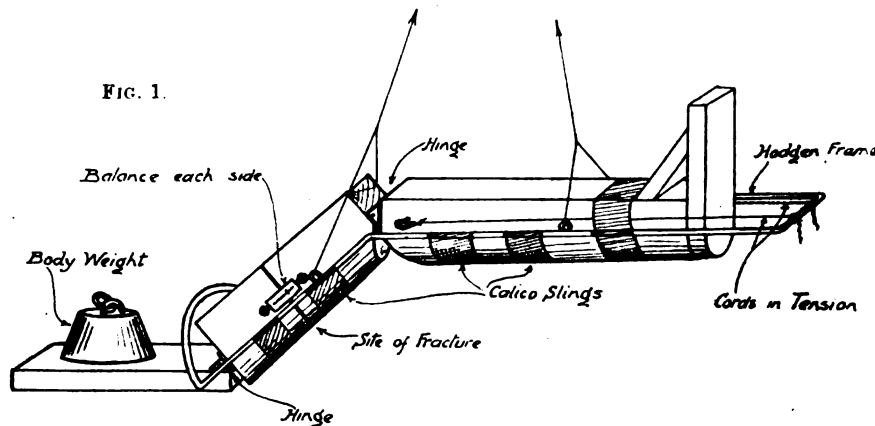
This system, unlike the former, is not ushered in as a rule with complete reduction under anaesthesia. Reduction is provided by a weight exerting what is believed to be a constant pull acting over a pulley, and counter-reduction is gained by elevating the bed and by throwing in the body weight. It is claimed for this method that it allows greater freedom of movements in bed and better access for dressing.

With regard to these two systems, the following points are to be made:—

1. The principle of the Thomas splint is the only tenable one in so far as complete reduction should always be obtained as the first step in any method of treatment, and it can be done only under deep anaesthesia with or without operative interference.

2. There is no doubt that by securing this, uncomplicated cases properly treated on the Thomas splint so speedily acquire union that movements of the knee-joint are little impaired.

3. By the failure to secure complete reduction *ab initio* the suspension system, often handicapped from the outset in overcoming resisting muscles, has perforce to resort to a reducing force acting over a longer period than would otherwise be necessary.



4. A failure to secure and maintain complete reduction in either method undoubtedly prolongs the fixation of the limb, and in many cases the immobilisation of the knee-joint.

5. In the early stage of treatment movements at the knee can be secured in both these methods only by releasing for the time the reducing forces, a procedure which by virtue of the mechanism of the appliances involved would immediately lose control of the broken ends of the bone, destroy immobilisation of the fracture area, and produce pain.

Direct Bone Fixation Methods (Calipers, Screw-clamps, Transfixion Pins, &c.).

This method of applying the reducing force directly to the femoral condyles is now widely used. It implies the use of a superstructure and the suspension of the limb. Splinting of some sort is applied to the thigh, but the leg is left free to move from a position of full extension through 90° of flexion on the thigh. Many ingenious devices are in use by which these movements are procured, and some surgeons go so far as to say that every fracture of the femur, irrespective of site, should be treated by the use of calipers.

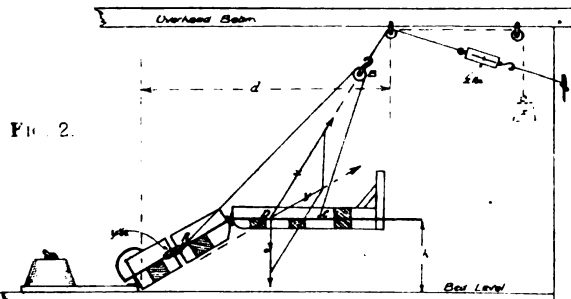
The method is theoretically the simplest and most economical of all methods of reduction. The reducing force is directly applied to the femur itself, and, irrespective of the movements of the pelvis or the leg, must act always along its axis.

In any other method whenever the leg leaves the position of full extension the reducing force acts indirectly via the knee-joint, and therefore at a mechanical disadvantage. Wherever this method is used movements of the leg should

always be provided for by the mechanism adopted, and the limb should never be rigidly fixed from hip to ankle in a splint of any kind.

On Adhesive Plaster, Glue, &c.

Perhaps the commonest method of affixing the reducing force to the limb is the old method of gluing or sticking bilateral bands of suitable material along the skin of the limb. If the limb be treated in the fully extended position throughout the adhesive plaster can be carried up to, or



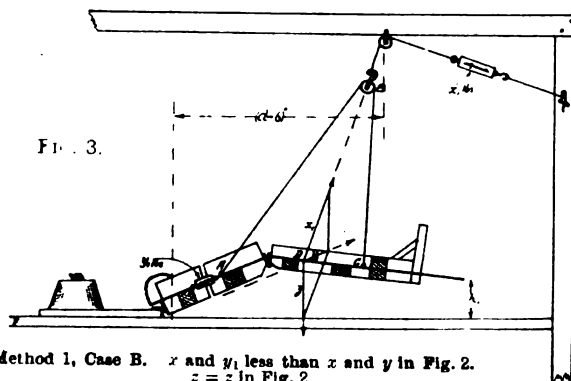
Methods 1 and 2, Case A. $D-B$, resultant of $A-B$ and $C-B$. z , turning moment about pelvis due to gravity. y , tension at site of fracture. x , tension on cord over pulley.

above, the site of the fracture, and the force will act directly along the axis of the femur—i.e., most economically. There is a further economy in the available skin.

If, however, the limb be flexed at the knee the adhesive should be carried to a point below the knee, and the force then acts indirectly along the femoral axis and at a mechanical disadvantage—i.e., uneconomically. There is also a loss of available skin. The trouble due to the use of adhesive plaster has been great. Notwithstanding the greatest care in its application and supervision, this trouble is still present. It is certain that such a method of affixing a reducing force to a limb will not permit of haphazard methods with pulleys and weights. It is a crude method at best.

It is suggested that much of the trouble could be avoided by the strictest economy in the application of force. Thus:

1. Weights are often applied by guess-work at angles mathematically uneconomical.
2. A resolution of forces employed in a given case would give a resultant upon the femur not at all in proportion to the total weights used.
3. Heavy weights are often left acting upon the adhesive and skin long after the complete reduction of the femur has



Method 1, Case B. x and y , less than x and y in Fig. 2. $z = z$ in Fig. 2.

been accomplished, when very much lighter weights are all that is necessary to maintain the results gained. This may be due to lack of observation, failure to measure the limb regularly and to make repeated radiographic examinations.

4. A change of position in bed may throw the system out of gear, cause variation in the reducing force, and allow of relaxation and fresh displacement at the fracture site. To overcome this heavier weights are again resorted to, with additional strain upon the skin.

If attention be paid to these details a great deal of the above trouble may be avoided. The question to be asked is—What is the minimum weight that can be used to produce in the shortest time the result aimed at? What is the correct way of applying it? The answer is to be found in the study of the mechanics of suspension.

Experimental Study of Certain Methods and Fallacies of Suspension.

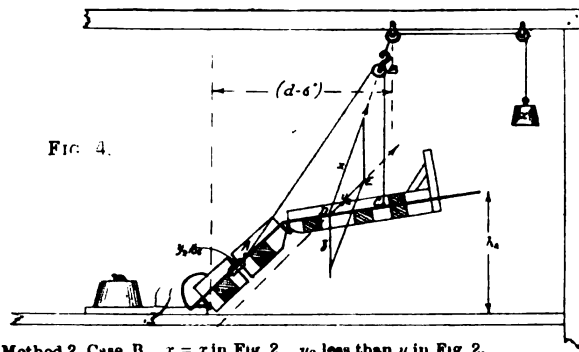
The efficiency of the Hodgen splint lies in the fact that the forces acting upon the rigid framework from above are divided into two sets: (a) those acting along the limb from hip to heel (direction); (b) those acting from below upwards. The former are transmitted by the bands of adhesive fixed to the distal end of the splint and applied to the skin of the leg—a tension effect. The latter are transmitted to the limb by the supporting crossbands of the splint—a pressure effect. There is thus a distribution of the reducing force into a tension and a pressure, each distributed more or less equably along the limb.

Consider here three of the commonest suspension methods in which the Hodgen splint, or modifications of it, are used.

The apparatus (Fig. 1), constructed of wood, was used as a means of checking the geometrical results shown below. The broken femur is represented by two wooden blocks, connected on each side by small spring balances, each capable of registering 20 lb. tension. By its use the theoretical findings were in every case substantiated.

Method 1.

Case A.—The first system investigated was the method originally described in the text-books as the Hodgen splint. This is shown diagrammatically in Fig. 2. The limb is suspended by one cord passing over a single pulley, B ; the latter



Method 2, Case B. $x = x$ in Fig. 2. y_2 less than y in Fig. 2, greater than y in Fig. 3. $z = z$ in Figs. 2 and 3.

is rigidly fixed to the overhead bar or upright. A large spring balance was let into the fixing cord. The mechanism of this case may be briefly solved as follows:—

ABC is a continuous cord running over the pulley. Therefore, tension in AB equals tension in BC . The resultant tension must bisect the angle ABC , and must therefore act along BD . Gravity produces a turning moment upon the pelvis. Let this force be z , acting through D . The forces x and z must have a resultant, acting parallel with the axis of the femur. Draw Dy through D parallel with the femur, and taking Dx any convenient length, complete the parallelogram $Dxyz$.

If x in direction and magnitude represents the tension in the fixed cord, then according to the parallelogram of forces, y must represent in direction and magnitude the reducing force upon the femur. Therefore y lbs. are exerted upon the balances at the fracture site by a tension of x lbs. in the fixed cord (see the large balance). Note, further, that y is not acting directly along the axis of the femur but parallel with it, and that y is a little more than half of x .

Case B.—Now let the patient move towards the foot of the bed, say 6 inches, all other fixtures being unaltered. What happens is demonstrated in Fig. 3, which is drawn exactly to scale with Fig. 1. It will be observed that the only force which does not alter in both direction and magnitude is the force of gravity, z . The new resultant, y , is greatly reduced, certainly by more than half, and the angle of the femur to the bed is, of course, altered. The deduction from the above is that by a movement of 6 inches, downward towards the foot of the bed, there is loss of 60 per cent. tension produced upon the femur. In practice, the patient soon finds this out. Considerable elevation of the bed often fails to check this. The practice of elevating the foot of the bed considerably is

to be condemned. It is quite unnecessary and can be obviated by varying the angle between the femoral axis and the horizontal. The nearer the femur approaches the vertical position the greater becomes the counter-reducing force of body weight. This was recognised by Scudder.

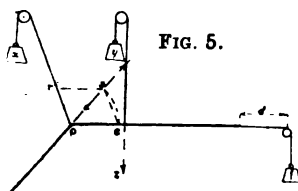
Method 2.

Case A (patient stationary).—Next consider the system where (see Fig. 2) instead of the cord being fixed to the upright, a second pulley is supplied and a weight of x lbs. is suspended to the end of the cord—i.e., the same weight as the tension shown upon the balance in the case of the fixed cord. It is unnecessary to say that, in this case, everything remains as in Case A, Method 1, provided the patient remains stationary in bed.

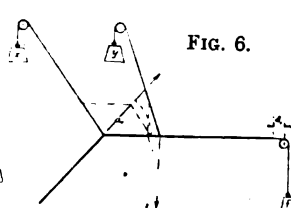
Case B (patient moves).—Now again, let the patient move towards the foot of the bed, say 6 inches: Fig. 4, drawn to same scale as former figures, demonstrates the change of forces, both in the direction and magnitude, which occurs. The direction and magnitude of all forces save that of gravity, z , change. y_2 , the resultant force, is greater than in Method 1, Case B (Fig. 3), and less than in Method 2, Case A (Fig. 2); in other words the second pulley with weight is an improvement and saves a certain amount of loss of tension on the femur due to movement of the pelvis. If the patient moves towards the foot of the bed extra weight must be added to the cord, therefore, to maintain uniform tension.

Method 3.

Case A.—One frequently sees a limb suspended in a Thomas splint, bent at the knee in varying angles with the adhesive strapping secured to the distal end of the splint. The ring of the splint is usually in loose apposition to the



Method 3, Case A.



Method 3, Case B.

gluteal fold and tuber ischii and the main reducing force is applied by weight and pulley from a superstructure to the distal end of the splint.

A similar method is also frequently seen with the Hodgen splint. It is not suspended as in Figs. 2, 3, and 4, but by two or more upright or oblique cords applied at either end of the splint and one about the middle. The main reducing force is then applied by weight and pulley from a superstructure to the distal end of the splint. These cases are analogous. The Thomas splint is here used merely as a supporting framework for the limb. Diagrams are unnecessary, as they are well-known types.

f lbs. (Fig. 5) acts directly along the axis of the leg. Let it be required to produce f lbs. pull along the axis of the femur. Let a represent f lbs. pull in magnitude and in the required direction. With a as a radius, describe arc sc . Complete the parallelogram $orrc$.

To get a resultant equal to f lbs. a second additional weight, it will be seen, must be added, represented in direction and magnitude by or and represented diagrammatically by x lbs. over a second pulley. Vary the angle of the splint at the knee (and from experience this is a very variable angle) and both the magnitude and direction of the force or must vary. The weight y represents any number of tensions suspending the limb, applied along the splint and counteracted by gravity z —i.e., the limb is suspended in equipoise.

The importance of this upon the two types of cases just cited is that: 1. The weight f acting over the pulley produces only a little more than half its weight as a direct tension along the axis of the thigh. 2. In all such cases as the above, a second weight varying in direction and magnitude with the leg-thigh angle is necessary to secure a resultant pull along the axis of the femur equal to the pull applied at the end of the splint. 3. This is irrespective of the weight already in use to secure equipoise on the limb. Therefore, whatever angle is selected at the knee in this type of rigid splint, the additional force and its angle of application should always be carefully calculated before use.

Case B (patient moves).—Fig. 6 shows the position when patient moves towards the foot of the bed. The drawing is to scale with Fig. 5. It will be seen that the direction and magnitude of the force y alters. Part of this force formerly used to secure equipoise now acts along the leg in opposition to f , and to this extent gravity z is unopposed. Hence the

distal end of the splint tends to drop. The force x alters very little in magnitude but its direction is changed, and hence the new resultant a alters appreciably in magnitude. The inference here is that even with the additional weight x a change of position in bed produces a falling off in the resultant force, and at the same time a tendency for the limb to rotate downwards upon the pelvis.

To sum up: The Hodgen splint, as used in Figs. 3 and 4, and the Hodgen and Thomas splint used as in Fig. 6, fail to give a constancy of the reducing force upon the site of the fracture. Movement of the patient up or down in the bed also produces variations in the accessory forces which may be applied. (See Fig. 6.) In all, flexion of the thigh is possible, but causes a variation in the force of reduction acting upon the fracture site. In all, movements at the knee-joint are impossible without throwing the apparatus out of gear.

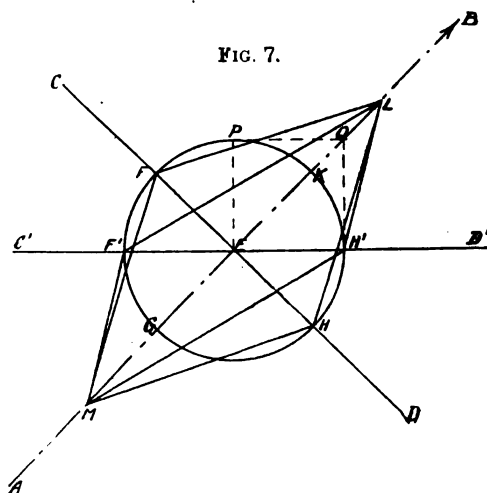
A Mechanical Device for Securing Free Movement at the Knee without necessarily using Calipers, Clamps, Transfixion Pins, &c.

In the methods discussed and in other modifications, the forces employed are often multiple and they are not applied directly along the axis of the femur. Eventually they are all resolved, some in roundabout ways, so that part at least of each force acts in this way. By acting at a mechanical disadvantage greater weights are thus often used to produce a given resultant than there is any necessity to use. The legitimate inference is that in all indirect methods of applying the reducing force there must be:—

1. A mathematically accurate method of arranging the forces so that the maximum resultant is obtained along the femur with the minimum components.
2. An angle of flexion of the leg upon the thigh, which is the most economical angle—i.e., one at which the leg shall bear the strain longer and easier and with less tension and pressure effects than at any other angle.
3. That variation of this angle will produce a variable but proportionate distribution of the forces acting upon the knee and leg and consequently a conservation of skin.

This can be proved as follows:—

Let AB (Fig. 7) intersect CD at right angles. With centre E and radius EF describe the circle $FGHK$. Take any point L between K and B on AB . Join LF and LH , make EM equal to EL , and join FM and HM . The figure $FLHM$ is



a parallelogram. Let LB represent a force divided into two equal forces LF and LH . The resultant force is LM (in direction and magnitude). Now let the line CD assume any other angle with AB —e.g., $C'D'$ —at an angle of 45° . Let the points where $C'D'$ intersects the circle be F' and H' . Join LF' and LH' , and $F'M$ and $H'M$. The figure $L'F'MH'$ can be proved to be a parallelogram.

Observe again that if LB represent a force dividing into two components LF' and LH' respectively, the new resultant is still LM in direction and magnitude.

And so it can be proved that whatever angle CD makes with AB , the resultant force must always lie along the line AB and be represented in direction and magnitude by LM , which is the constant diagonal of a varying parallelogram.

Apply the above, then, to the treatment of a fractured femur. Let AE represent the thigh, E the knee-joint, and

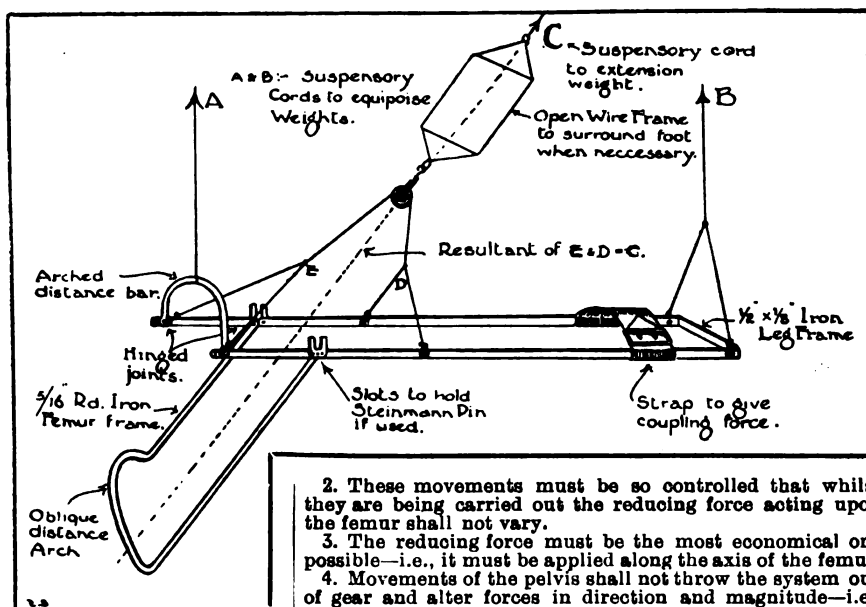
ED the leg, and let it be imagined that these lines represent the iron framework of a splint. Suppose the rigid bar ED be prolonged in the direction of EC to F , so that EF equals EH . Let FLH be a cord passing over a pulley at L , and let LB represent the main cord passing over a fixed pulley overhead. Let there be a moveable hinge-joint at E .

Case 1.—Let the leg ED be flexed at 90° to the thigh. A force LB , acting equally along the two cords to the points F and H , equidistant from E , produces obviously a resultant LM acting perpendicularly to the axis of the leg.

Case 2.—Let the leg $E D$ take the position $E D'$ —i.e., at an angle of 135° to the thigh. The iron framework of the leg assumes the line $C' E D'$, and the forces $L F'$ and $L H'$ along these cords are now unequal. But the resultant $L M$ (vide parallelogram of forces $L F' M H'$) is the same in direction and magnitude. Note, however, that the resultant $L M$ now acts at an angle of 45° with $E D'$, and we can resolve it into two sets of forces, one acting along $E D'$ from E to D' , and the other perpendicularly from below against $E D'$. It is obvious that these two sets of forces must at this angle be equal.

As the angle DED' increases the tension force acting along ED' proportionately increases, and the pressure force acting

FIG. 8.



2. These movements must be so controlled that whilst they are being carried out the reducing force acting upon the femur shall not vary.

3. The reducing force must be the most economical one possible—i.e., it must be applied along the axis of the femur.

4. Movements of the pelvis shall not throw the system out of gear and alter forces in direction and magnitude—i.e., the angle of the thigh to the horizontal should be capable of variation without affecting the main reducing force applied to the femur.

5. The thigh must be sufficiently elevated above the horizontal to secure adequate counter-reduction from body-weight without raising the foot of the bed.

6. Anterior arching of the fractured segments shall be provided for.

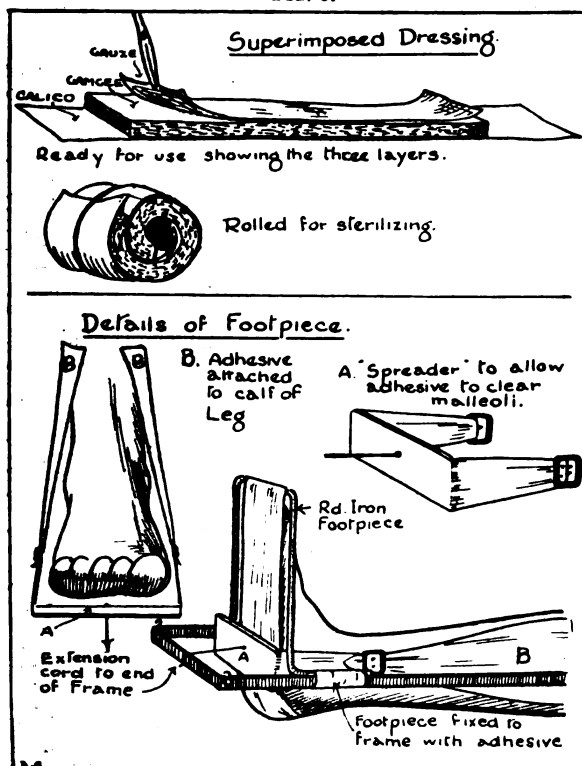
The following is the apparatus in question :—

Method of Applying the Splint.

The splint (Fig. 8) is applied by first straightening it out so that the femur frame is in line with the leg-frame. The transverse axis of the knee-joint is next marked upon the limb, and the splint is laid in position, flat on the bed and enclosing the limb. The knee hinge is placed exactly opposite the spot marked. The adhesive plaster which has been applied beforehand to a point just below the knee is now secured by any convenient method to the distal end of the splint (see Fig. 9). Supporting bands of calico or other suitable material about 4 inches wide and carrying 1 inch depth of superimposed wool or Gamgee tissue are next fixed to the side bars, passing beneath the leg. The lower third of the leg should be completely ensheathed in wool and firmly secured between the bars of the leg-frame either by a buckled strap passing over the crest of tibia or by a firm bandage. This constitutes a couple in the turning movements about the knee-joint, and ensures that the leg and leg-frame move as one. The cords *A* and *B* are next fixed as in the diagram and passed over fixed pulleys and attached to their respective weights. With an assistant supporting the thigh, the limb is now elevated and slung in delicate equipoise. This is easily effected by accurately estimating, by a spring balance held in the hand, the exact weight upon each cord necessary to produce a stable and at the same time a delicate equilibrium. The cords *A* and *B* should subsequently be made to act vertically by using a plumb-line before fixing the respective pulleys overhead. This is a matter of great importance, because upon the fineness of these adjustments depends the stability of the leg in any position of flexion selected. Pulleys should be well oiled and at least 1½ to 2 in. in diameter, and so constructed that the cord cannot jam. Lastly, the cord *C*, with wire foot-frame and pulley, is fixed to the leg-frame, as indicated in Fig. 8, and the main reducing weight is applied to this cord passing over a fixed pulley, the latter being placed most conveniently at a point almost vertical to the foot of the bed. The thigh is secured in the femur frame after the manner shown in Figs. 10, 11, and 12, superimposed dressings being used for this purpose (see Fig. 9), but other methods of securing anterior bowing can be used according to the site of the fracture.

Fig. 10 shows the apparatus applied and the manner in which the leg-frame rotates about the knee-hinge at *o*. *A* and *B* weights support the limb in equipoise. The apparatus after rotation remains in the new position without any fixing, as shown by *A*₁ *B*₁ and *A*₂ *B*₂. In the position *A*₂ *B*₂—i.e., full extension—the foot passes into the wire foot-frame, which is designed to permit of this. The reducing force *C* remains unaltered, as also does the angle at the hip, by this rotation. Distributed pressure along the calf (*E*) and pull upon the adhesive (*I*) vary with the angle at the knee. At the angle

FIG. 9.



perpendicularly to ED' proportionately decreases. At length, when ED' comes to lie upon EB —i.e., when the leg is in full extension—the whole reducing force upon the femur is now applied directly along the axis of the leg and thigh.

All this suggests an apparatus in which the following points can be satisfied :—

1. The leg must have complete freedom of movement from full extension to flexion at 90° to the thigh.

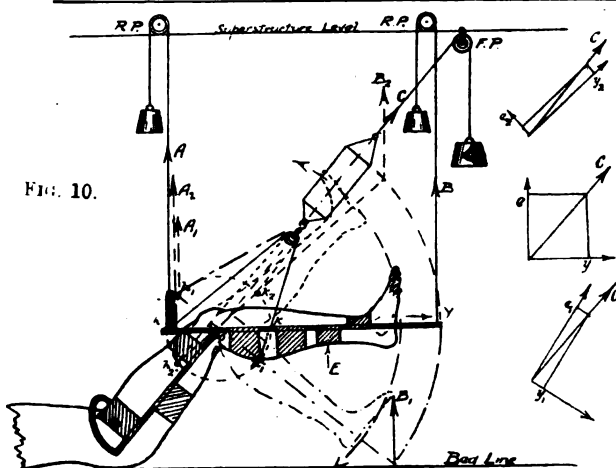


FIG. 10.

Author's Method. Flexion of knee joint. Rotation of splint about hinge at *o*. *A* and *B* supporting weight of leg and splint in equipoise, the apparatus after rotation remains in new position as *A*, *B*, and *A*₂, *B*₂. Pull at *C* and angle at hip remain unaltered by this rotation. Pressure at *E* and pull on adhesive at *Y* vary (see force diagrams). Explanatory letters denote same points as in other diagrams.

of 135° they are equal (see midposition). The parallelograms at the side indicate how these forces vary in the three selected positions—i.e., *C* is resolved into *e* and *y*, *e*₁, *y*₁, and *e*₂, *y*₂.

Fig. 11 is a diagrammatical representation of mobility in bed and flexion of the hip. The pelvis may move from *x*₁ to *x*₂, i.e., 30 inches to scale—a large range of movement. The angle θ ₁ changes to θ and then to θ ₂. The leg-frame changes from position *A*₁ *B*₁ to *A* *B*, and then to *A*₂ *B*₂. The reducing forces *C*₁, *C*, and *C*₂ always act along axis of femur. *E* *E* *E* denotes the pressure effect distributed along the calf, and *F* denotes the couple effect produced by the bandage or strap around lower third of leg. *Y* denotes the tension acting along the axis of the leg due to the mechanism of the adhesive plaster fixed to the distal end of the splint.

From this it is evident that, once the position is selected from which it is impossible for the patient to withdraw towards the head of the bed, an adjustment of the overhead fixed pulley transmitting the main reducing force may produce an angle " θ " of the femur with the horizontal, to increase which is for the patient both irksome and difficult.

This position then is the position in which the reducing force is counteracted by the greatest available body-weight, and its effect is similar to that produced by extreme elevation of bed. When the height from mattress line to super-

structure level is 4 ft. 6 in. or over, roving pulleys are quite unnecessary. The fixed pulleys then make such small angles to *A*₁ *A*₂ and *B*₁ *B*₂ that the effect is negligible.

In the apparatus described above (Fig. 12) no new principle is involved. It is a simple adaptation of the Hodgen splint and its efficiency is largely due to the mechanical device at the knee end of the leg-frame whereby a couple effect is produced.

It will be observed that the movements of the knee so distribute the forces acting upon the leg that when one set exerts too much strain or pressure this may immediately be relieved by alterations of the leg-thigh angle. The other set

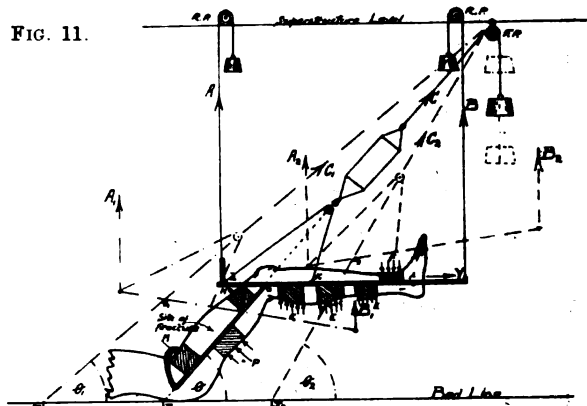


FIG. 11.

Author's Method. Mobility in bed and flexion at hip. Change of angle θ at hip. *x*₁—*x*₂ = 30 inches, a large range. F.P., fixed pulley. R.P., roving pulleys.

then takes up the difference. Thus by varying the angle at the knee a corresponding variation is produced between the forces acting along the axis of the leg and those acting perpendicularly to it.

Accessory Methods.

The apparatus lends itself to the employment of most of the well-known methods of affixing the reducing force to the limb, thus:—

1. The crest of the tibia may be transfixed by a suitable pin long enough to rest upon the lateral bars of the leg-frame, to which it can be firmly secured. Two such pins may be used, one 3 inches below the tubercle and a second 3 or 4 inches above the ankle-joint. The effect of this will be to do away with any pressure upon the calf posteriorly and to eliminate the necessity of adhesive plaster or glue should the use of such be inadmissible or regarded unfavourably.

2. Two small cups at each upper extremity of the thigh supports are provided for the use of a Steinmann's pin should transfixion of the condyles be preferred.

3. Chutro's or Finocchetto's stirrup may be used in preference to the adhesive plaster, and the attachment can be made to the end of the leg-frame.

4. Calipers can be applied in the usual way, in which case the bars of the leg-frame should be set below the horizontal teeth of the calipers. The cord *C*, with its wire foot-frame, will be fixed directly to the calipers and not to the leg-frame. The rest of the apparatus remains the same.

It must be recognised that it is not always convenient or even possible to use calipers or any of the methods of fixing the reducing force directly to bone, and that in any case there are always a number of surgeons who do not approve of them. That being the case, the above apparatus, it is hoped, may be of use in utilising the older methods to the best advantage.

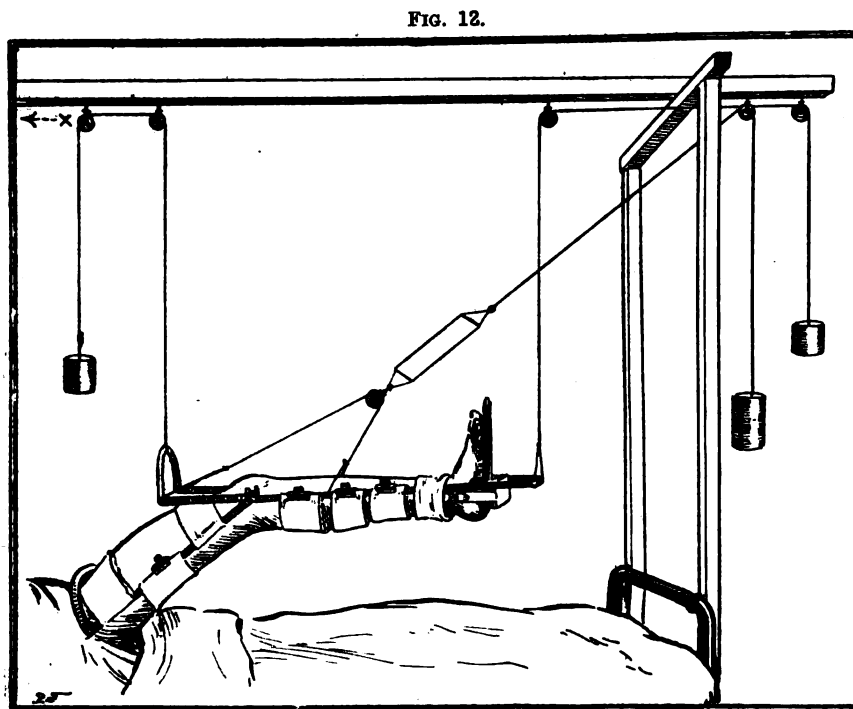


FIG. 12.

Author's Method. S apparatus as used in wards. *x* pulley carries the weight to head of bed.

AN INTERESTING CASE OF ECTOPIC GESTATION.

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With Pathological Description by
ERNEST H. SHAW, M.R.C.P. LOND.,
PATHOLOGIST TO THE GREAT NORTHERN CENTRAL HOSPITAL.

CASES of ectopic gestation are not very rare events in the emergency operation list of a large general hospital. There have been on an average five a year in this hospital during the last ten years. The case, however, which it is desired to note has certain peculiarities which render it of more than usual interest. It is an example of a very early rupture—six weeks' pregnancy only—of the rarest of all types of ectopic pregnancy—viz., that in the interstitial part of the tube; while the difficulty of diagnosis is also worthy of note.

Account of Case.

The patient was 30 years of age, and previously had been quite healthy. She had had no children, but 18 months before she had had an incomplete abortion, which rendered evacuation of the uterus under an anæsthetic necessary. She had suffered occasional attacks of acute pain in the right iliac fossa, which her doctor diagnosed as appendicitis.

On admission, at 11 P.M. on August 16th, the patient stated that she had been quite well until 2 A.M. on the morning of that day, when she was seized with acute pain in the right lower abdomen. The pain was severe while it lasted, but ceased after a short time, to recur again at intervals. There was no sickness and no irregularity of the functions of the bowel or bladder. Menstruation had been quite regular until six weeks ago, so that the period was only 14 days overdue. No hæmorrhage or discharge had occurred from the vagina.

On examination the patient's general condition appeared good. The pulse was fairly rapid—about 98 beats to the minute—while the temperature was 100.2° F. and there

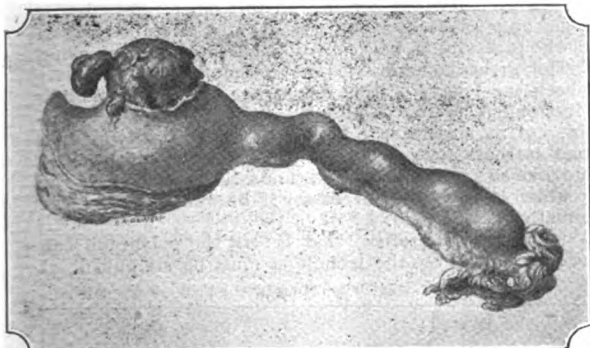


FIG. 1.—The specimen in the fresh state. Note the emerging ectopic pregnancy. $\times 2/3$.

was no marked pallor. The tongue was furred, the breath foul, and sordes were present round the teeth. The abdomen moved well with respiration, there was no rigidity anywhere, but acute tenderness was found localised to the right iliac fossa, with its maximum well below McBurney's point. No tumour could be felt in the abdomen and nothing abnormal by the vagina.

A diagnosis of an inflamed retro-cæcal appendix was made, though it was thought possible that some tubal trouble might be present. Laparotomy was decided upon. On opening the abdomen nothing abnormal was seen until the pelvis was explored with the hand, when a large amount of blood welled up into the wound. This rendering the diagnosis of an ectopic pregnancy probable, the patient was placed in the Trendelenburg position and the pelvic viscera explored. Both tubes seemed quite normal; the uterus, however, was somewhat enlarged, and at the right cornu there was seen what looked like a small mass of blood-clot about the size of a filbert adhering to the uterus. The abdominal incision was enlarged and a partial hysterectomy with right-sided salpingo-oophorectomy performed. The abdomen was closed, a considerable quantity of warm saline being left in the peritoneal sac.

The following description of the specimen removed was kindly written by Dr. Shaw.

Macroscopic.—The specimen consists of the whole length of the Fallopian tube and the lateral angle of the uterus. (Fig. 1.) The outer half of the tube is rather swollen and red, and the isthmus gradually becomes thinner as it approaches the uterus, where it ends in a large ovoid swelling projecting from the uterus. This swelling is about 1 inch in vertical diameter and about $\frac{1}{2}$ of an inch in its other dimensions. It is covered with peritoneum except at the apex, where a small piece of blood-clot protrudes from a small perforation. Blood shows through the peritoneum for some distance round the clot. On section the tumour is seen to be red and solid, and blood is effused into the loose tissues below. Although fairly well-defined, the mass of blood-stained tissue is not limited by a capsule, nor is there any sac or membrane suggesting amnion or chorion. No foetus can be made out.



FIG. 2.—A section of the uterine portion of the Fallopian tube showing chorionic villi in situ. $\times 90$.

Microscopic (Fig. 2).—A section made through the tumour at the site of the perforation shows blood and remains of muscular tissue at the periphery and a tuft of chorionic villi within and also projecting through the hole in the wall. The villi are well formed and are embedded in blood. No decidual tissue is seen in this section.

I have to thank Mr. Mower White, senior surgeon to this hospital, under whom the case was admitted, for his kindness in allowing me to publish the case, and also for the opportunity of operating upon it. I also wish to acknowledge the kindness of Dr. Shaw for his description of the specimen and his help in preserving it.

THE ERADICATION OF LATENT SEPSIS

PREPARATORY TO BONE TRANSPLANTATION IN NON-
UNION OF GUNSHOT FRACTURES OF THE LIMBS.

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THE two outstanding causes of the immediate failure of many bone graft operations for ununited gunshot fractures are the occurrence of infection derived from pre-existing latent foci and the breaking down of ill-nourished skin cicatrices. Experience of such failures has brought about the almost universal practice of postponing a reconstructive bone operation until a considerable period has elapsed from the time of the complete healing of the wounds, and of excising adherent skin scars at a preliminary operation. Six months has been adopted by more or less common consent as an adequate waiting period, but only if during this time physio-therapeutic treatment of the limb has caused no such inflammatory reaction as would indicate the presence of latent sepsis.

The Empirical Basis of the Present Methods.

The probationary period, the exsection of skin scars, and the provocative manoeuvres of the massage and electrical departments form a triad of precautionary measures which

in a great many cases—probably the majority—ensures a successful result for the subsequent bone transplantation. Such a standard of safety is, however, founded on an empirical basis; each one of the three factors may prove untrustworthy.

In the first place a six months period is an arbitrary one, as in a given case the tissues may be sterile at the end of two months or may be still capable of infective reaction as late as nine, or even 12, months after healing. A knowledge of the anatomical situation of latent septic foci in these ununited fractures throws considerable doubt on the ability of physio-therapeutic treatment to produce with certainty a "flare up" when it is remembered that the encysted foci are found in the avascular fibrous tissue between and around the bone ends and in the bone ends themselves. For the same considerations no vaccine or serum test can be expected to afford evidence of any positive value. Finally, there can be no doubt as to the necessity of excising adherent skin scars in the region of the non-union, but in my experience this operation does not go far enough.

Provided the necessary preliminary mobilisation of joints, tendons, and muscles, and the stretching of contractures have been obtained, it is desirable to be able to carry out with safety a bone transplantation where indicated, at the earliest possible date. This is especially desirable in complicated injuries such as combined bone and nerve lesions where operative interference is necessary for the repair of the latter. Furthermore, from the standpoint of the patient the prolonged delaying of an operation is to be avoided, if possible, but this economic factor must not be allowed to exert undue influence in the plea for early operation.

We are confronted with the fact that there is no certain test or combination of tests by means of which one can determine when a limb has reached the stage of safety. It is therefore reasonable to regard every limb with an ununited fracture as capable of an infective reaction at any stage, however remote the time of healing may be. An attempt to effect a radical excision of the area containing the suspected foci in every case before performing the bone graft would seem to be a logical procedure.

A Two-Stage Procedure.

Working on this basis, during the past 18 months I have used a two-stage procedure in bone graft operations in the majority of my cases and have now adopted it as a routine in every case.

Stage 1.—When the wounds have been soundly healed for eight weeks, during which period regular physio-therapeutic treatment has been carried out, the following operation is performed. After an excision of the adherent skin scars the site of the non-union is exposed. The fibrous tissue filling up the gap is excised, together with a slice of the bone ends sufficient to expose vascular tissue. The block of tissue is removed as far as possible *en masse*, and all isolated bone fragments and attached bone "spikes" are included. The clean section of the bone ends and the removal of the fragments is an essential step. The excised tissues are placed in a sterile test-tube or jar and sent to the pathological laboratory. The bed for the subsequent graft is now swabbed out thoroughly with Harrington's solution. The bone ends and the region of the gap—now increased in size—are covered in by a restoration of the fascial and muscular coverings and the skin wound is sutured after undercutting the flaps to allow easy approximation.

This operation is at once an attempt at wound sterilisation, a provocative measure, and a reconstruction of the bed for the future graft. In two to three weeks' time the limb is usually ready for the resumption of physio-therapeutic treatment.

Stage 2.—The bone transplantation is performed in from six to eight weeks' time after the uncomplicated healing of the first stage operation. During this period the usual physical treatment is continued. Ionisation of the wound area is always prescribed in order to obtain the maximum softening of the superficial and deep scars. The details of the technique of the bone graft operation are outside the scope of this article, but my experience of more than 80 bone transplantations for various disabilities has emphasised the superiority of the inlay graft over all other methods. A graft must be long enough to reach several inches above and below the actual gap and should need no additional fixation when accurately wedged into the gutter.

The bacteriological examination of the tissues removed in the first stage is of the greatest importance, whether the findings be negative or positive. If the tissues prove to be sterile, and an uncomplicated healing of the operation wound occurs, the future bone graft can be awaited with confidence. The cultivation of organisms (other than skin germs, e.g.,

Staphylococcus albus, the appearance of which should cause a scrutiny of the operative technique) associated with primary healing of the operation wound affords strong indication that sterilisation of the area of non-union has been achieved.

Two cases in my series illustrate this point. In one, an ununited fracture of the femur of 12 months' duration, with wound scars which had been healed for six months, *B. proteus* was cultivated from the fibrous plug found in the medullary cavity of the lower fragment. Infection of the wound followed. In the second case, non-union of the radius, the same type of organism was isolated, but primary healing occurred and the patient resumed physio-therapeutic treatment in two weeks without any subsequent reaction. In this type of case the second stage should be postponed a little longer than usual, though the waiting period need not exceed three months.

In my opinion the two-stage procedure for bone-graft operations, carried out as described above, has conclusively proved its value, and I regard any procedure less radical than that advocated in the first stage as an inefficient index of the subsequent sterility of the limb and an inadequate preparation for the introduction of the transplant.

SOME ADVANCES IN POLYGRAPHIC TECHNIQUE.

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THE clinical polygraph has only gradually been making its way into everyday use since its introduction by Sir James Mackenzie many years ago. This instrument in the hands of a few pioneers has given us such valuable information of the mechanism of the heart beat, and has so far unravelled the tangled skein of cardiac irregularities, that it might appear surprising that the clinical polygraph is not now in daily use by all practitioners.

There are, I think, several reasons why this instrument is not as widely used by the profession as the importance of the information it yields would warrant. The chief obstacle may be a difficulty in procuring an instrument; but that is not the only cause, for one occasionally meets a medical man who possesses an ink polygraph but has given up using it. The great objection to the instrument in the past has been the length of time taken not only in assembling the instrument, taking the tracing, and then packing it up again, but in measuring out the tracing and arriving at a correct interpretation. The busy practitioner, much as he would like to use the polygraph, finds he cannot spare the time which is at present necessary if he would acquire the information it will yield.

It is obvious, therefore, that before the polygraph can come into general use the technique must be simplified. I

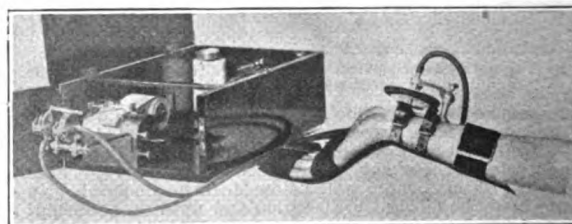


FIG. 1.—The polygraph in position of use, and the wrist splint.

claim that the following three procedures, which I have adopted, very materially reduce the time, not only in taking the tracing, but in measuring it and arriving at an interpretation: (1) the adoption of a box in which the instrument can be carried about fixed ready for use; (2) the use of a wrist splint; (3) the introduction of a modified slide rule for measuring out the tracing.

Description of Improved Methods.

With the aid of diagrams only a short description of each improvement is necessary.

1. *The new polygraph box.*—Fig. 1 shows the polygraph in the box. The top and front of the box open on hinges; when shut they are fastened by lock and key. All the parts of the instrument, including even the pens, are kept in

position for use. It is only necessary to lift the machine forward into the position shown in the figure and fill the pens before taking a tracing.

2. *The wrist splint.*—In the past a source of annoyance and loss of time in taking a tracing has been the movement of the patient's wrist, resulting in the radial pen being thrown off the paper and spoiling the tracing. This splint, which I have adopted and found very helpful, is also shown in Fig. 1. The wrist is fixed in a position of hyper-extension and the radial artery thrown into prominence. The ordinary wrist-piece is strapped into position round the splint, and the forearm then rests on the operator's knee. The radial pen will write perfectly straight on the paper, and it is possible to keep it quite close to the edge of the paper without any fear of the pen moving off; in fact, the patient can move the forearm without altering the position of the pen. The splint can be applied to either the right or left wrist. Some workers are now using the glycerine tambour elbow-piece for recording the brachial pulse instead of the radial. This, I believe, was first used in Germany and introduced into this country by Dr. T. Lewis. I do not, however, find that it gives such a good tracing as the old wrist-piece.

I do not propose to give an account of the ordinary methods now in use of measuring out a tracing with a pair of compasses. It is only those who use the polygraph who will at once appreciate the enormous saving of time and labour effected by the introduction of my slide rule.

3. *The modified slide rule for measuring tracings.*—This consists of a piece of polished wood with grooved sides to carry a slide. The slide has a window which is partially filled with a thin sheet of celluloid, and a space is left between the celluloid sheet and the ends of the frame of the slide, so that the waves can be marked on the tracing with a pencil. Fig. 2 shows a part of the slide rule, with a tracing

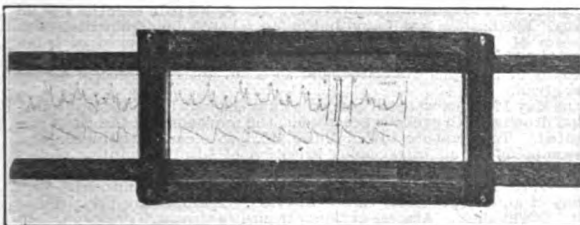


FIG. 2.—The polygraph slide rule.

fixed in position. The tracing is fixed at each end of the slide rule by drawing pins. The slide is then slipped on and moved until the sheet of celluloid lies over the ordinates. The ordinates of both the radial and venous curves are then traced on to the celluloid. These two ordinates are marked by a cross at their upper end. A line 1/10 second to the left of and parallel to the ordinate of the venous tracing is now marked in, c, and gives the position of the beginning of the carotid wave, when the radial ordinate is at the beginning of the rise of any one of the radial beats. Another ordinate, A, 1/5 second to the left of the carotid ordinate, marks the position of the beginning of the auricular wave. An ordinate, v, 2/5 second to the right of the carotid ordinate, gives approximately the summit of the v wave.

Any of these points can immediately be fixed in any particular part of the tracing by moving the slide along until the radial ordinate lies at the beginning of the rise of the corresponding radial pulse. Similarly, any two consecutive radial, carotid, or auricular waves can be marked on the celluloid sheet and the spacing rapidly compared throughout the whole tracing by moving the slide over it. Any other of the many measurements that may be necessary can be made in the same way.

The most convenient method of marking in these ordinates is to use a copying pencil, but if ink is preferred I think the best is Arnold's black waterproof drawing ink. When finished with, the ordinates can easily be erased from the celluloid sheet by a damp cloth. The ordinates can be marked in neatly and rapidly by running the pencil along a thick piece of celluloid cut to the segment of a circle described by the pen. The same arc of celluloid will serve for any tracing if the pens are pushed home into their receiver before taking a tracing.

I hope these improved methods will direct other workers to attempt to simplify still further polygraphic technique. These appliances can be obtained as follows: the polygraph box from Mr. D. Bulmer, 8, Rosebank-road, Woodsley-road, Leeds; the wrist splint from Mr. Arthur Vizard, 46, Great George-street, Leeds; the slide rule from Mr. Fred Raper, 24, Servia-place, Servia-road, Leeds.

ON REPAIR OF THE MALE URETHRA.

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THE plight of the man who by injury or disease has suffered the loss of a portion of his urethra is miserable alike from local discomfort and mental distress. Any operation which affords a possible chance of restoring the channel is worth a trial. It is for this reason that we wish to report a case in which we successfully repaired an extensive urethral defect by a method of grafting preputial skin into the gap. Whilst fully realising that no great stress can be laid upon an isolated and possibly fortuitous success, we desire to record the case, since there are, no doubt, instances of men suffering from gunshot injuries of the urethra in which the method may prove of some service. The operation was done over a year ago and the interval is sufficient to render the permanency of the result well-nigh certain. The details of the case are as follows:—

The patient, a strongly built man aged 37, was seized in April, 1917, with a sudden extravasation of urine due to a stricture of old standing. Very extensive incisions were made into the scrotum and lower abdominal wall with perineal drainage of the bladder. Much sloughing ensued, especially about the perineum, but he eventually made a good recovery, the whole of his urine passing by the perineal opening.

On Nov. 14th, 1917, he was admitted to the Manchester Royal Infirmary. Examination showed a small fistulous opening through which the whole of the urine was discharged. This opening was placed immediately in front of the anus and was embedded in much scar tissue.

On Nov. 26th the patient was anaesthetised and placed in the lithotomy position. A median incision 2½ inches long was made, so placed that it embraced the fistulous opening at the hinder end of the incision. Much scar tissue was encountered, but by the aid of a Wheelhouse staff the proximal end of the distal portion of the urethra was identified. This was dug out of scar tissue and freshened by a cross section. The distal end of the proximal segment was then sought. It was found easily, but was difficult to define owing to its being almost flush with the triangular ligament. With both ends thus freed, it was seen that there was no possibility of direct end-to-end union, the gap being 1½ inches in extent.

In order to obtain material to fill in the gap a circumcision was done on a year-old infant with a very long prepuce. This was done by the old forceps method. The portion of skin so obtained was divided vertically and by separating and reflecting the small strip of lining mucosa some increase of the size of the graft was obtained. The graft thus made was rectangular, and consisted for three-quarters of its area of skin and for one-quarter of mucous membrane.

The next stage of the operation was to convert this graft into a tube fixed to the divided ends of the urethra. The graft was first stitched by three sutures to the cut edge of both ends of the urethra on the dorsal surface of the canal. A large silver catheter was then passed and the graft was fixed by sutures at both ends to the cut edges of the urethra on its ventral aspect. A continuous suture, inserted parallel to the catheter, converted the graft into a tube, having skin and mucosa for its inner lining. The sutures were of a lightly chromicised catgut. The soft parts were then united over the graft with some difficulty owing to the scar tissue and the covering layer consisted of little more than skin, which was brought together without drain by sutures of silkworm gut. The metal catheter was left *in situ* and was retained unchanged for eight days, at the end of which time it was removed and no further attempt was made to pass an instrument. On the fourteenth day the patient developed a subacute left-sided epididymitis, due no doubt to the long retention of the catheter. This gave little trouble but was slow in subsiding. The wound healed without incident, no urine having leaked at any time since the operation. The patient passed urine freely after removal of the catheter and continued to do so without difficulty and with no undue frequency.

No further instrumentation was done until March 9th, 1918, 15 weeks after the operation, when sounds were employed to investigate the condition of the urethra. A 9/12 sound was passed without any difficulty. On his discharge from hospital at the end of March a sound passed without any evidence of narrowing of the grafted segment, and three months later a 9/12 sound passed readily.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF SPRUE ASSOCIATED WITH TETANY.

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THE onset of tetany in association with diseases of the digestive system has been not infrequently noted, but it has not before been recorded in a case of sprue.

The patient, a male, aged 45, contracted the disease on the China Station in 1911-13, probably at Shanghai. He had suffered from many relapses of diarrhoea and sore tongue, but more frequently during the past two years. In July, 1918, he was admitted to the Royal Naval Hospital, Plymouth, for chronic colitis, and the disease was then diagnosed as sprue, the stools being pale, bulky, and fermenting. He was extremely emaciated and debilitated, and weighed 84 lb. On Sept. 19th, 1918, he came under my charge at the Dreadnought Hospital, Greenwich. The condition then was that of a typical case of sprue in its last stage. The temperature was subnormal, pulse 74, respirations 24, and his mental condition was clouded, but he was generally very cheerful. There was intense emaciation, dry skin with increased pigmentation around nipples, scrotum, face, and axillae. The conjunctivae were pearly white, tongue was dry and glazed but no ulceration was present; the abdomen was distended, peristalsis very active and easily stimulated. The stools were semi-solid, pale yellow, abundant, offensive, but not fermenting. The urine showed a trace of albumin. No oedema, petechiae, or sores. The systolic blood pressure was 95 mm., and the pulse of low tension. Examination of the blood showed red cells, 1,480,000, and white cells 3200; polymorphs, 61; lymphocytes, 34; mononuclears, 3; and transitionals, 2 per cent. The blood picture was that of a severe secondary anaemia without nucleated red cells.

Under treatment the patient showed signs of improvement, but on Sept. 23rd he complained of slight cramps in right hand and wrist. These were relieved by warmth. On the morning of the 24th he felt well but for the cramps, and passed a large fermenting stool; at mid-day definite tetany set in, chronic spasm of right hand fingers, wrist, and forearm. The deep reflexes were lost, but the muscles reacted. The condition rapidly became worse, with collapse, intense pain, and sweats, the spasm spreading up the arm and across the chest, with a marked trismus, typical risus sardonicus, and the right leg was slightly affected. The bowels acted involuntarily. Oxygen was administered, an ether injection given subcutaneously, and also a turpentine enema. At 2.30 P.M. the trismus had passed off and he felt much better, but the hand was still clenched. At 3 P.M. he was taking food and felt more comfortable, but was very weak. Calomel was given with Dover's powder, and he was ordered a course of thyroid extract.

There was no return of the tetany, but the general condition did not improve, and on Oct. 3rd slight pyrexia with pulmonary symptoms came on. He died on the 7th quite quietly in the night from heart failure, apparently free from pain.

Post-mortem showed a complete absence of fat in the tissues. The heart (5 oz.) was very small and superficial white patches were present. The intestines contained much soft faecal material; no ulceration was found anywhere, but the walls were very thin, especially those of the lower part of the jejunum and ileum. The mesenteric glands were enlarged. The spleen was small and free from adhesions and weighed 1½ oz. The liver appeared normal, weighing 3 lb. The kidneys were both large, pale, and weighed 4.5 oz. The pancreas appeared normal, and the thyroid was atrophied. The left pleura was adherent throughout and both lungs showed intense oedema, most marked at the bases.

A microscopical examination of the organs was made. The liver showed a slight amount of interlobular cirrhosis. In the kidneys there was some evidence of chronic tubular nephritis, but no infarcts or haemorrhages. The lungs showed haemorrhagic and catarrhal infiltration of localised areas. The pancreas appeared to be normal. Sections of the small intestine showed atrophy of the villi with a small-celled infiltration in the submucosa, and in this layer were a number of stout, oval, and slightly curved, rather large Gram-positive bacilli, but no evidence of yeast-like cells could be found.

The chief interest in the case lies in the severe attack of tetany which came on late in the disease from no apparent cause other than some intestinal irritation; its unilateral character as far as the limbs were concerned, and the severe bilateral trismus; the extreme emaciation of the patient,

making the contracted muscles stand out more prominently even than usual. The rapid action of the subcutaneous injection of ether in relieving the spasm is noteworthy.

PERITONSILLAR ABSCESS FOLLOWED BY OSTEOMYELITIS, NECROSING ENCEPHALITIS, AND MENINGITIS.

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With Report on Pathology by WYATT WINGRAVE, M.D. Durh.

FROM the comparatively trivial degree of its early symptoms, the regrettable delay in evacuating pus, and the extensive lesions revealed by necropsy, this case is of the deepest interest. It is instructive to note the extensive destruction of bone, and that the patient should have suffered so little pain or even discomfort. She continued her work until eight days before death. The thrombosis of the jugular bulb evidently prevented pulmonary sepsis. An early diagnosis of the peritonsillar abscess 16 days before the patient attended hospital, with a free incision and evacuation, would have obviated the serious and fatal complication. The notes of the case are as follows.

Mrs. A. B., age 48, was in good health until April 29th, when she had an attack of tonsillitis and a peritonsillar abscess on the right side; no treatment except a gargle. On May 4th swelling of the left eyeball, slight pain in the throat and back of head; but she did not consult anyone, and continued her daily work. On May 15th the swelling of the left eyeball became worse, and she went to the Western Ophthalmic Hospital. Mr. George Thompson sent her to my clinic, and she was admitted as an in-patient at once.

On admission the patient had pain in the back of the head, neck, and in the cervical region; her speech was not clear. There was a prominence of the left eyeball with ptosis, slight injection in the outer canthus, a dry tongue, and temperature 102° F. No pain over the frontal sinus. Fluctuation was found in the faucal arch due to a peritonsillar abscess of 16 days' duration, which had not been opened or spontaneously evacuated. This abscess was at once freely incised, a large amount of foul pus evacuated, and 25 c.cm. antistreptococcal serum was given.

On May 17th pus was still escaping from the incision. Patient somewhat drowsy, both eyeballs prominent, the movement of the right one limited. Temperature 104°. Pulse 110. 25 c.cm. antistreptococcal serum injected; an intravenous injection of 1 in 1000 solution of perchloride of mercury given a few hours later. On May 18th patient drowsy, restless, sleepless. Both eyeballs swollen and prominent. Two doses of antistreptococcal serum injected. Temperature 104°. Pulse 116. Slight rigor. Abscess explored to ensure thorough drainage. On May 19th patient unconscious. Thick fetid pus still escaping from the abscess cavity. Temperature 102°. Pulse 100. On May 20th patient unconscious, both eyes prominent and fixed. No reaction to light. The house surgeon, Dr. George Lean, reported that ophthalmoscopic examination revealed "choked disc" in the right eye with thrombosis of veins and small haemorrhages. Temperature 102°. Pulse 120. Severe rigor. On May 21st condition much the same. Temperature 102°. Pulse 128. Patient died on May 23rd.

Report of Necropsy by Dr. WYATT WINGRAVE.

On removing the tongue, larynx, and pharynx a sloughing space was found laterally about the level of the soft palate, which travelled backwards in the deep cervical fascia to the prevertebral area. Following the track upward a large packet of green pus was evacuated and traced in the prevertebral muscles to the basi-occipital and basi-sphenoidal bones. Only a thin shell of these remained, their cancellous elements being reduced to a soft green fetid mass extending into ethmoid and orbit.

On removing the skull and dura diffuse purulent meningitis was found involving the whole brain. Over the right temporo-sphenoidal area was an extensive patch of necrosing cortical encephalitis which extended to a depth of 3 cm. All the ventricles were distended by a fetid green pus. Seen from the intracranial aspect the basi-sphenoidal and basi-occipital bones showed complete necrosis. Only their outer walls remained. The pituitary body was reduced to a semi-fluid mass and the adjacent osseous sinuses were full of pus. The jugular bulb, sigmoid, and lateral sinuses were firmly thrombosed.

Films of the pus from all the regions showed the same character—viz., streptococci, staphylococci, mycelia, and coarse forms of *Spirochaeta frutida* with some bacilli of xerosis type (diphtheroid).

The thoracic and abdominal viscera were normal. The right orbit contained green pus which entered by a perforation in the ethmoid, the roof was intact, and the left orbit not involved.

A specimen of green pus, removed on opening the peritonsillar abscess, showed no evidence of recent suppuration. The bacteria were the same as those found at the necropsy. This material was evidently an old pocket of pus from which infection burrowed into the deep cervical fascia in an upward direction causing acute osteomyelitis of the basi-occipital and sphenoidal bones followed by a meningeal infection and necrosing encephalitis. Such conditions strikingly illustrate the powerful tryptolytic action of unevacuated pus even upon living structures hard or soft, an action second only in importance to that of the infecting organisms. The streptococcus was the active pyogen, the spirochaetes being doubtless merely symbiotic saprophytes, yet adding to the destructive powers of the locked-up pus.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

Admission of Pensioners to Civil Hospitals.

A GENERAL meeting of Fellows was held on Tuesday, Jan. 14th, Sir HUMPHRY ROLLESTON, the President, being in the chair, when Mr. H. J. WARING opened a discussion upon the Conditions under which Pensioners of the Army, Navy, and Royal Air Force are Admitted into, and Treated in, Civil Hospitals.

Mr. WARING said that the question of the admission of pensioners into general hospitals for treatment was considered by the council of the Section of Surgery, when it was thought that some agreement should be come to among the hospitals as to the lines of admission and remuneration. With the assistance of Mr. Warren Low and Mr. J. Y. W. MacAlister, circulars were sent round to all the London hospitals with medical schools and a certain number of others. The communication ran:—

1. Does your hospital receive payment from the Ministry of Pensions at the rate of 7s. per head for in-patients and 2s. per head for out-patients?
2. Are the naval, military, and Royal Air Force pensioners admitted as in-patients placed in special wards, in special beds allocated for the purpose or along with ordinary hospital in-patients?
3. Are they placed under members of the hospital medical staff specially appointed for the purpose or are they treated in the ordinary routine practice of the hospital?
4. Are similar pensioners treated as out-patients seen at special clinics for the purpose or are they seen along with the ordinary hospital out-patients?
5. As regards the funds received from the Ministry of Pensions, are they entirely allocated to the general funds of the hospital or are they in part used for payment of the members of the hospital staff who treat the pensioners, and, if so, how are the staff paid?

The replies received could be divided into four classes.

The first class, comprising a comparatively small number, receive these patients and decline to accept any remuneration, because they do not pay any members of the staff for attending to them. Two large London hospitals adopt that principle. There are also two without schools which do so, and one outside London.

The second class comprise those hospitals who receive payment—that is to say, 7s. per day per patient for in-patients, 2s. per attendance for out-patients, and do not pay the staff who attend them. Four large London hospitals take these patients in that way, and one of them proposes, at the end of the year, to discuss the question of what shall be done with the money so received. One very large provincial hospital, which takes 5s. per day for in-patients and 1s. 6d. per attendance for out-patients, does not pay anything to the staff.

The third class take these pensioners at the prices mentioned, and pay 10 per cent. of the total receipts to the members of the hospital staff who attend them. Two London hospitals with schools are on that basis and four provincial hospitals.

In the fourth group the staffs are paid, but in different ways. One receives these patients at 7s. per head and 2s. per attendance respectively, and 20 per cent. is allocated to the medical staff. That, apparently, is the largest payment to staffs of any of the hospitals in this connexion. The hospital is a large one, but without a medical school. Another hospital pays the staff one guinea per attendance per day, giving about four guineas per week to the staff who attend these men as out-patients. (No details as to in-patients.) At one hospital the medical staff are paid £50 per annum for the work, but, apparently, that particular hospital does not receive a large number of these patients. Another hospital which has received the 7s. and 2s. rate does not propose to renew the agreement with the Ministry of Pensions on the present terms.

Arrangements for Treatment and Remuneration.

Considering first the best method of dealing with pensioners in hospitals, Mr. Waring said that the most satisfactory way to him was to allocate a special ward or wards, and to place them under definite members of the medical staff; and as regards out-patients, many of whom were able to do a certain amount of work, to have special clinics in the latter part of the day, so that employed men could attend without interfering with their work. It was difficult to estimate the numbers of these men. Originally it was said that there would probably be 100,000, but the War Office authorities now suggested that that number would not be reached. In the case of a small hospital the matter would be met by allocating special beds in certain wards under the care of particular members of the staff, the out-patient arrangements remaining the same. The value of pensioners for teaching purposes in hospitals with attached medical schools should be borne in mind. Such hospitals should consider how far cases applying for admission were suitable for the education of the medical student. Certain cases were undoubtedly of value for this purpose—e.g., nerve injuries, some bone injuries, but others, such as chronic suppurating bone sinuses, were unsuitable.

In regard to payment, the State had admitted its duty to look after pensioners. They were sent to the hospitals by

the Local Pensions Committee on the recommendation, usually of their medical referee, that they required special treatment. The question therefore arose, Ought the members of the honorary medical staffs to be paid as well as the hospitals? As the State admitted its liability for payment for the treatment, he thought that the staffs ought to be suitably paid. The payment in the majority of cases was apparently 10 per cent. If in a hospital there were 20 beds that would give an income from the pensions authorities of £2000 in the year, of which the medical men who looked after the cases would receive £200. If the allotted beds were not constantly full the income would be correspondingly diminished. If several members of the medical staff looked after these patients the individual emoluments would be very small.

Turning to out-patients, with remuneration at the rate of 2s. per attendance, 10 per cent. of that was less than 2½d. Hospitals which paid this 10 per cent. seemed to think it was right for members of their honorary staff to attend these patients on what to him appeared an extremely minute payment. He did not think any member on the staff ought to be asked to attend under such conditions. There was the further question of whether the hospitals were making anything themselves. In 1917—the last year for which the returns of the King's Fund were available—in one hospital, charging respectively 7s. and 2s., the average cost of each in-patient per week was £3 5s. That hospital was therefore paying its staff for doing something for the State. For out-patients the average cost being 1s. 2d. on a 10 per cent. basis the hospital was making 7½d. out of each attendance. The difference between in-patients and out-patients was therefore striking. At two hospitals £3 5s. was the approximate cost, and one of them had refused to go on at the 7s. rate. In regard to the hospitals with schools the average worked out at £123 4s. per bed per year, which, of course, was considerably more than the State was paying. Taken altogether, the State was not paying sufficient for the treatment of these patients.

Mr. Waring asked if any of the Fellows had proposals to make as to what the State ought to pay if pensioners were to continue to be treated in civil hospitals. The first thing to be done in his view was for hospitals to be paid at least the staffs' out-of-pocket expenses and adequate payment to the medical staff. It would be a fair proportional remuneration to look upon the hospitals as receiving two-thirds of the payment and the staff one-third. The 10 per cent. basis was evidently far too small. Some might prefer the proportions 2 to 1. If his suggestions met with approval he proposed to move a resolution that pensioners should be in special wards, or special beds, under particular members of the staff, that the out-patients should be seen at special clinics, and that, as regards payment, the hospitals should receive two-thirds and the staff one-third of the total amount received from the Pensions Committee.

Criticism of Various Points.

Sir NESTOR TIRARD said that he spoke as a free-lance, being no longer connected with the Army, except in an honorary capacity. One difficulty in treating pensioners in a general hospital arose from the different point of view observed in dealing with pensioners and Army men and with the ordinary type of cases admitted to hospitals. The people likely to be sent to the hospitals by Local Pensions Committees would still carry on some of the sort of Army tradition in regard to qualification for admission to a military hospital. They would in no sense, as a bulk, be suitable for teaching purposes. In dealing with the patients nothing whatever was to be gained except the satisfaction of doing one's duty for men who had been injured in the war. He did not want to minimise that satisfaction, but the profession had to consider if it was prepared to undertake whole-time work in connexion with the Ministry of Pensions, in the same way as they had undertaken such work during the war. There was another difference. In ordinary hospital work patients were visited on definite days settled on by the administration, twice or three times a week, and at other hours when the necessities of patients demanded it. In a military hospital, on the other hand, the principle had been daily attendance during the morning hours. Members of the hospitals had been invited to offer for whole-time work in connexion with the Ministry of Pensions, and by whole-time work was meant daily attendance, whether, in the doctor's opinion, the condition of the patient demanded it or not.

It was the practice in a civil hospital for the resident medical officer to have interim charge of wards. Whether the wards contained pensioners or not this was the only convenient way of working them; and for the members of the staff who have charge of the wards to act as consultants and attend at regular times on definite days. In regard to payment, it would not be necessary to demand daily attendance from the ordinary consulting physicians and surgeons of the London hospitals; their time would be wasted in the majority of cases. For instance, in the medical group it was not necessary for the expert in neurology, shell-shock, dysentery, malaria to attend daily. The work was done by the resident medical officers, who should therefore take a reasonable proportion of the remuneration. If anything came of this proposal for payment, he hoped that the payment would be primarily devoted to the younger men in the profession, those who were living in the hospital and doing the work.

Views of a Hospital Secretary.

Mr. G. Q. ROBERTS (Secretary, St. Thomas's Hospital) said that in the early discussions held between the representatives of the managing committees and of the staffs of four or five of the largest hospitals in London, the decision was reached that everything possible must be done for the men who had suffered in the war. But, at the same time, there must be a recognition, by a payment, of the services rendered by the staff in doing work for which the Government had accepted full responsibility. Personally, he had thoroughly disagreed with the idea of payment by such a ridiculous proportion as the 10 per cent. indicated. Taking the out-patients alone, that represented about 2d. per attendance. A new case was not examined under about 20 minutes. Four fresh cases per hour were about all which could be got through, and 8d. an hour was hardly adequate for the most junior man on the staff. But if, as should be, a man sees also the returned cases, the average per hour goes up. When the 2s. per attendance was mentioned it was never thought that would adequately pay any members of the staff who did the work. With regard to the arrangements made for seeing pensioners there were two important points. Cases likely to be useful for teaching purposes, on which the opinion of an expert was required, should be assessed by the member of the staff seeing the cases, who decided whether he should see the case again for continued treatment. For the remainder, and they were many, in large part functional, a regular evening clinic should suffice. They had been completely snowed under by attempting to treat war pensioners at the ordinary afternoon clinic. The number of new cases usually sent round to out-patient physicians and surgeons was strictly limited. The number of war pensioners referred to hospital who did need the opinion of an experienced man was so great that it unduly handicapped the resident assistant physician or surgeon in selecting cases to send round for the opinion of the staff from among the civilians. Hence the evening clinic under the charge of comparatively young men of experience. Mr. Roberts said that he interpreted the agreement in regard to war patients not that cases sent by the Medical Referee were necessarily received, but they were examined on the opinion of a member of the staff in the same way as civilians were. The members of the staff had been unanimous in saying that as pensioners were occupying beds which, in the ordinary way, would have been occupied by civilians, they would not accept payment for those cases. The governors had therefore felt justified in accepting from the Ministry a payment of 7s. per day, which was the average cost of each in-patient per day at the time the rate was fixed. This year the cost would be found to be considerably higher. Pensioners were hearty eaters, and they cost more to feed than the average civilian patients. The vast majority of the cases attending required massage or electrical treatment, and for these four sessions per week were provided, in addition to the ordinary four sessions taken by the physician and the surgeon. Those cases did just about pay for themselves.

With regard to payment, the money was being kept entirely separate on a twelve months' trial, and an agreed sum was being allotted to the individuals doing the work, including masseurs, those doing medical electrical treatment in the evenings, as well as clerks to keep a complete register. If at the end of the year a balance should remain, its dispersal would only be made after full consultation with the staff.

As a hospital manager he would not set aside special wards for the treatment of war pensioners. These men had been

much spoiled and petted, had been granted little licences and freedom, and were difficult to control afterwards. In ordinary civilian wards they soon fell into the routine discipline of the ward. On an average they had had only 17 in-patients during the year; they could not set aside a special ward for that number. Most of the wards contained 28 patients apiece; the medical cases had to be separated from the surgical, the specially septic cases from the cleaner ones, so that a number of wards would be required if pensioner cases were allocated to separate wards. If special wards were to be provided the Ministry of Pensions would have to make other arrangements. On the present plan the pensioners had the personal direction and decision of members of the staff, who attended to them in precisely the same way as the civilian cases.

Further Discussion.

Sir KENNETH GOADBY said that the first broad question to face was the actual number of wounded in the hospitals at the present time, and the number of those who were potential patients. In his own observation of 10,000 wounded cases, exactly 10 per cent. had re-presented themselves for various treatment. For cases requiring continuous treatment the military hospital was the best that could be devised. The only way to enforce discipline was by knocking off a proportion of the man's pension, a difficult thing to do in a civil hospital. Many of these men would want treatment during the rest of their lives; they were going to be in and out of hospital out-patient departments, with occasional stays as in-patients. He agreed with Sir Nestor Tirard that a large proportion of these would be of no value for teaching purposes. He submitted the advisability of continuing the fixed disability pensions of these men. A man was more likely to work if his pension was continued. He wanted to know how far hospitals would place themselves under the control of the Ministry of Pensions by accepting payment for the treatment of pensioners.

Dr. SYDNEY PHILLIPS said that the question whether hospitals were prepared to take pensioners at all still appeared to be an open question. Sir Nestor Tirard appeared to think that men who came in as pensioners should be required to come under the same regulations as soldiers. But the men had already left the Army, and the inquiry came to the hospitals from the Pensions Committee who had not laid down rules such as obtain in military hospitals. He had not heard that the staffs of London hospitals were being asked to do whole-time work. So far as he had seen, there was no intention on the part of the Pensions Committee to interfere with the treatment of the cases; they left the hospitals to supervise the treatment for which the staffs of those hospitals were responsible. Medical officers in hospitals would as before go as often as they thought right. He saw no reason for not receiving the proposition of the Pensions Committee with favour. It had already been received by St. Thomas's, St. Mary's, and others throughout the year, and, he thought, without very much difficulty. Pensioners would be civilian patients and not even ex-soldiers. The Army in this war consisted to the extent of 99 per cent. of civilian soldiers. They were the same people whom hospital staffs had been attending all along, and they were coming into hospitals every day with the same complaints as they had before. Having been in the Army three or four years, some of them less, did not prevent them having the ordinary diseases and ailments. Of two patients suffering from melaena, one came through the Pensions Committee, the other was seen because it was an emergency. It was impossible for the large hospitals in London to refuse to take pensioners, because a great part of the male population between 25 and 35 years of age who had served in the Army would be in the next ten years patients at ordinary civilian hospitals. It was only a matter of terms. In regard to the objection raised that pensioners were not cases for admission into hospital, he said that the Pensions Committee only asked for cases to be sent in on which the medical staff of the hospital acquiesced as suitable. If there were additions it was to the interest of the hospitals to appeal to the public to improve the hospitals for the requirements of men who had served in the Army. If the hospitals refused to accept these men they would lose the interest of the student for new cases, such as tropical disease, many of which would come in from war areas, and there would be lost an unparalleled field for medical study. The question of payment

was more one for the administration to debate. The Pensions Committee had never made any secret of the fact that they would pay the medical officers. They had said they would pay so much per man to hospitals in which there were resident medical officers, and so much less if there were not resident medical officers, clearly showing they would pay the doctors for the services they rendered and that there were two classes of hospitals, which would not be reckoned as of the same value. They had now said how much they would pay, and it rested with hospitals to allocate it between the staff and the management. Before any hospital could say what they would take they surely must know how much the medical staff was prepared to ask. In future resident medical officers would not be obtained without payment. There would either be unqualified medical officers or paid medical officers resident in hospital.

Discussion of Resolution.

Mr. WARING then read the resolution which he proposed :

That if naval, military, and Royal Air Force pensioners are to continue to be admitted to civil hospitals these conditions should obtain. 1. In-patients should be admitted to special wards or special beds under special members of hospital staff. 2. Out-patients should be seen at special clinics. 3. As regards payment, hospital authorities and medical staff should receive remuneration on the basis of two-thirds to the hospital, one-third to the staff.

He added that after this discussion had been planned it was publicly announced that in future naval and military pensioners would be treated in military hospitals, and he understood that in the main that was being done.

Mr. ROBERTS explained that the instruction was permissive, not compulsory. As far as St. Thomas's was concerned, the pensioners were preferring otherwise, and there had been no diminution in their attendance.

Sir NESTOR TIRARD seconded the resolution, adding that he had seen copies of the circular sent to two of the medical schools, asking, on behalf of the Ministry of Pensions, whether members of the staff were prepared to undertake whole-time duty with them.

The Question of Hospital Accommodation in General.

Dr. LAURISTON SHAW said that to him the question was a larger one than that of dealing with pensioners. If we were not getting the most satisfactory arrangements for those who had been hurt as combatants the reason probably was that we were not having satisfactory arrangements with regard to people who had been crippled in industry. And he hoped the experience now being gained would enable us to see where our difficulties are. Some of the confusion which arose in early negotiations was because we did not clearly make a distinction between the hospitals which had schools and hospitals which had not them. The conditions were utterly different. A strong stand should be taken against cramming beds with cases which could better be treated in hospitals with less elaborate arrangements and equipment than the large hospitals with medical schools attached. It was clear that an enormous increase of hospital accommodation was wanted in this country. This need not be accompanied by corresponding increase in hospital staffs, for a large proportion of hospital patients came in on the recommendation of practitioners, who should continue to treat them in hospital. Patients frequently came solely because their home conditions were not suitable. Hospital accommodation should be classified into that required for serious cases needing special investigation and expert treatment, and cases to be dealt with by a kind of cottage hospital.

Secondly, it was necessary to hold the State to the principle that if it undertook the responsibility for the treatment of the patient it must pay the medical profession for that treatment. It was impossible to say to the Government, "We, as philanthropists, will treat your patients for nothing." We would do so if the philanthropic public would come along and pay for the patients sent into hospital. Any other course would lead to the impoverishment of the profession.

Further Adverse Criticism.

Sir JOHN BLAND-SUTTON said he was hoping to hear of some alternative scheme to that of foisting disabled soldiers on the general hospitals. In London that plan had been already tried for a year. At the commencement of the war, surgeons, he said, saw that their services at a military hospital would not end with the hostilities, but that many of the men would require treatment for months and years. The proper way seemed to be to convert the hospitals for their reception practically into Poor-law infirmaries, places

for incurable and chronic cases. Then a surgical and medical staff could be organised to meet the new conditions who need not be London consultants at all. There must be many men with surgical and medical experience in the Army during the war who would be well able to look after these cases in such institutions. If the practice became general of receiving these cases into the general hospitals, they would soon be filled with chronic and incurable cases. The question of payment was one for the lay bodies of the hospitals, and they could not agree upon it. He suggested putting a motion urging the Pensions Minister to establish his own institutions and rid the hospitals of the incubus. There must be something like 300,000 sick and disabled soldiers to deal with.

Mr. COLES said that at one provincial hospital they had allocated 25 per cent. of the money received from the Pensions Ministry for these cases for the payment of the honorary medical and surgical staff. He thought the time would come when these patients would have to be dealt with in the evening, and the cost would then necessarily be increased. At the present time the rates of 7s. and 2s. did not leave much to be handed over to the staffs.

Major J. ADAMS suggested that the management and teaching staffs of hospitals were rather at variance in their points of view as regards the clinical material of the hospital. The Ministry of Pensions was taking advantage of the bad financial condition of hospitals in offering a subsidy which the management in present circumstances felt tempted to accept. The hospital staffs did not want their beds filled with unprofitable clinical material. A member of the teaching staff of a hospital was at present a servant of that hospital, and if it was right for a hospital to accept payment for patients received, it was between the hospital and the particular member of the staff to agree as to what remuneration he should receive. At St. Thomas's Hospital he had treated a certain number of pensioner patients, but only as if they were ordinary civil cases. He did not go to the hospital more frequently for seeing them, and had not spent extra time in operating upon them. He should, therefore, not like to make a claim for special payment. The proposition that there should be separate wards and separate payment for those wards, he thought, was too difficult for most hospitals to arrange. He agreed that the pecuniary reward to medical officers should in teaching hospitals go to the younger men.

Reply to Points Raised in Discussion.

Mr. WARING, in reply, said he agreed with Sir Nestor Tirard that the medical officers who did the greater part of the work for the patients should receive the emoluments. His main contention was that the medical profession should be paid for the work it did. At St. Bartholomew's there was a special ward with 20 beds and a certain number of patients had to be taken into the general wards in addition. By separate wards he implied that these patients should be definitely placed under certain members of the staff. That would be easier for administration and also easier for the Ministry of Pensions. With regard to discipline, his experience was that if these men were in a general ward they fell in with the usual routine. Evening clinics were, he thought, of great importance in saving of time for pensioner patients. Dr. Shaw's suggestion that more hospital accommodation was required was apparent to all. Modern surgical and medical treatment could not be given under bad surroundings; in the matter of institutional treatment for the non-hospital classes we were one of the most backward countries. As to using the present military hospitals, many of the temporary buildings were constructed only for a few years' use, and some were already beginning to fall down.

The PRESIDENT then put the resolution, clause by clause. Part 1 was lost; Part 2 was carried; Part 3 was carried with the deletion of the word "adequate." On the proposition of Dr. SHAW, seconded by Mr. WARREN LOW, it was decided to send a copy of the resolution to the British Hospitals Association.

SECTION OF SURGERY.

Bone-Grafting.

THE ordinary meeting of the section was held on Jan. 22nd, Sir JOHN BLAND-SUTTON being in the chair.

A paper entitled "Mandibular Bone Grafts," by Major O. W. WALDRON, C.A.M.C., and Captain E. F. RISON, C.A.M.C., illustrated by cases and numerous slides, was read

by Captain RISON, and formed the introduction to a general discussion. The authors state that although bone transplantation is a surgical procedure of long standing, the unexampled opportunity afforded by war injuries has enabled a careful study to be made of its limits and possibilities, especially in cases in which the mandible has been seriously broken up. Within a few days of being wounded most of the cases have arrived at a special centre for treatment, and the large number of cases which had achieved good union testify to the fine results of those who specialise in this work. They consider that the close and continuous coöperation of surgeon and dental surgeon is of prime importance in these cases. In early stages the mouth must be kept as clean as possible, special care being taken in regard to septic pockets and cavities, and in this stage dental splints should be used, the hindering sequestra being from time to time removed, for the prevention of displacement and to ensure due control of the edentulous posterior fragments. Dental splints are usually required for at least two months. In cases where non-union is obvious there should be early attempts at movements of the jaw for the purpose of avoiding atrophy and articular ankylosis. Careful periodic examination of the teeth and the extraction of such as need it is regarded as important. Teeth which are of service in the immobilisation of the parts should be preserved, and there should not be any great pressure on the teeth. Drainage must persist so long as there are any unhealed sinuses. At least six months should elapse since the disappearance of sepsis and inflammation before bone-grafting operations are attempted; and when the ununited fragments are strong and easily controlled, so that the patient is able to masticate with the aid of splints, this period before operation can be extended. The authors believe that quite a number of failures have been attributable to operation having been done too early. Grafts should include both the periosteal and the endosteal surfaces; in fact, all the elements should be comprised—the graft will then most nearly approach the physiological. When open cancellous bone, such as that of the rib, is used replacement is rapid; it is less rapid in grafts cut from face or tibia. The relative osteogenetic activity of transplanted bone varies with the individual case. The authors' work has been done with autogenous bone-grafts. In most instances it is preferable to fix the fragments in good position by means of strong dental splints, and carry out the operative procedure accordingly. The splints should be cemented to the teeth at least a week before the operation to allow the buccal mucous membrane to become habituated to their presence. In 19 of the cases dealt with the anæsthetic employed was rectal oil ether, and the authors think highly of it. Every effort must be made to avoid perforation into the mouth cavity. The edge of the fragments should be trimmed back 2 cm., and intervening cicatricial tissue excised and discarded. Simple instruments have been preferred; it seemed dangerous to use such an implement as an electrically-driven saw in such a confined space. After a good deal of experience they believe bone from the iliac crest gives the best results. The patient should be kept in bed a few days to prevent the formation of a hæmatoma, which might become infective. If a case requires closure of the mouth for months it should be opened at intervals for inspection.

Discussion.

Captain W. E. GALLIE, C.A.M.C., said that some of the old beliefs on this subject had been rudely shaken as a result of experience with war injuries. In the clinic to which he is attached many experiments on dogs had been carried out. When a piece of living bone has been separated from its circulation and implanted elsewhere in the body of the same patient the immediate result is seen to be a coagulation of nerves and vessels, to which the surrounding lymph cannot percolate. This means the death of all the cells in the lacunæ and of most of those in the Haversian canals. The absorption of these structures occupies three to four weeks. On the open mouths of the canals are osteoblasts, which are able to absorb lymph. Ten days after implantation the proliferation of the osteoblasts is well established on both the endosteal and periosteal surfaces, and in a few days new bone formation can be seen on these surfaces. These proliferating osteoblasts attack the dead bone of the graft and quickly cause excavations. Meantime, a re-establishment of the circulation has been taking place as a result of the ingrowth of new blood-vessels into the mouths of the Haversian

canals. This occurs in about two weeks. Ultimately the whole graft is seen to be permeated by vessels and osteoblasts. The union of the graft takes place by the laying down of new bone on the surface. If from the graft endosteal and periosteal surfaces are removed very little osteogenesis takes place from the graft itself. The rapidity with which the changes occur depends on three factors: the size of graft, its density, and the abundance of the osteoblasts on the surface which survive. In some cases months must elapse before replacement can occur. When boiled bone is used for grafts the changes take place at a definitely slower rate. Where there is a gap to be bridged only autogenous grafts promise success; if boiled bone be used here the living elements will slowly disappear. The great point to aim at in grafting, as it is only on the surface that living osteoblasts survive, is to have the largest osteoblast-bearing surface possible; hence the width of the graft should be greater than its thickness. Except in cases where a strong graft is essential tibial bone should not be employed; that of the rib is better, as it is not only more porous but is better supplied with lymph. It is wise to split the graft longitudinally into a number of portions; in that way a large number of osteoblasts will be given the chance of survival. Boiled bone-graft plates have been largely used at this clinic instead of Arbuthnot Lane's metallic plate and have given much satisfaction. Not only is there no likelihood of these getting loose, but at the end of 10 months (as shown in slides) the only evidence of irregularity is a slight fusiform swelling, and even this disappears after a still further interval.

Major MAONAUGHTON DUNN, R.A.M.C., also gave his experiences on the subject in considerable detail, supported by a carefully selected series of sequential slides. He alluded to errors of technique and their results.

Major S. ALWYN SMITH, D.S.O., R.A.M.C., spoke mainly in connexion with operative fixation of carious vertebrae, and stated the kind of cases which should be chosen for it and the technique to be followed.

SECTION OF OTOTOLOGY.

Deafness Associated with the Stigmata of Degeneration.

A MEETING of this section was held on Jan. 17th, Mr. HUGH E. JONES, the President, being in the chair.

The PRESIDENT read a paper entitled "Deafness Associated with the Stigmata of Degeneration." The object of the communication was to show that there is an association between deafness and defects of auricles, the latter being regarded as indices of degenerations or deficiencies of various important neurons. He was not dealing with those gross stigmata of the face and middle ear which result in direct interference with the conduction of sound, but rather with the more subtle signs of defects and even of degeneracy the recognition of the significance of which affected, for good or ill, the reputation of the specialty. Of 210 out-patients in an ear clinic, 64 per cent. showed auricular defects, such as were regarded as associated with degeneracy. Of cases of chronic tympanic catarrh and oto-sclerosis, there was a proportion of 49 defective auricles to 9 good ones, whereas among cases of nerve affection the numbers were 23 to 3. Among accidental affections the proportion was 35 imperfect auricles to 41 good ones. The small numbers which Mr. Jones had been able to deal with definitely showed that there was a preponderance of more or less degenerate auricles in patients who were the subjects of ear disease and deafness. Specially was this true of oto-sclerosis, and that type known as psychical. Of the general public, he was satisfied that defective auricles did not occur in a greater proportion than 1 in 5. On a particular Sunday he noticed that all the choir-boys (who might be deemed to have sound and sensitive ears) had well-formed auricles, as also had the organist and the clergymen, whereas of the 200 worshippers, 1 in 5 had defective auricles. Of 114 eye patients, 90 had good lobules, 12 doubtful ones, and only 11 were actually defective. None of the eye cases complained of deafness. Patients in the ear department disclosed a high proportion with defective external ears.

He quoted the following case in support of his thesis, as it was very rare to find this ear condition uncomplicated with other diseases of the organ. He believed degeneration to be the underlying condition and the predisposing cause of many diseases of the internal and middle ear:

The case was that of a boy, aged 17, who wished to enter the merchant service, but feared that deafness and imperfect eyesight might interfere with his career. He had already consulted five aural surgeons, and had been under varied treatment for a number of years. On the advice of one of the surgeons the lad was taken to a medical electrician, who charged him £150 for treatment which produced no benefit. His father died at the age of 45, his grandfather at 43, but no family history of deafness was obtained. The boy had narrow attached lobules. There was no enlargement of tonsils and no adenoids. The boy was neurotic but intelligent. His ear symptoms might be regarded as caused by pre-senility. His defect was nearly equal in the two ears. There was distinct loss of bone conduction. The boy appeared to be giving the examiner proper attention, but fatigue reaction was not noticed. Ophthalmoscopic examination showed pigmentary degeneration of the peripheral zone of each retina, not, however, of the type of retinitis pigmentosa, as there were no spider-like patches of pigment.

There appeared to be, therefore, in this case correlative degeneration of the auricles, one or more auditory neurons, and the pigment layer of the retina, all of which are epiblastic tissues. Mr. Jones considered that this type is far commoner than it is generally thought to be, and that the factor of degeneration should be taken into account in cases of ear disease which occur in persons exhibiting any of the stigmata of degeneration, however slight. The "type case" quoted presented to the speaker problems which were phylogenetic, ontogenetic, and sociological in character. Treatment must be preventive. F. W. Mott had stated, in one of his lectures, that the neuron, like other cells, nourished itself and depended for its development, life, and functional activity upon a suitable environment, and that it must possess inherent vital energy. In the neuropathic individual, however, in some portions of the nervous system, especially the brain, there might exist communities, systems, or groups of neurons with an inherited low power of storage, hence the energy would rapidly become exhausted and depression of function would be liable to ensue. Mr. Jones did not agree that many who showed defects of the pinna had a criminal tendency or showed defective brain power, but rather, he thought, such defects were associated with localised potential, or actual, degenerations of the auditory nerve tract.

Mr. Jones then proceeded to discuss the subject from the embryological standpoint, and passed on from that to the sociological, declaring that attempts should be made from birth to counteract the tendency; the degenerative factor could only be dealt with on general lines, and nutrition always played a very important part.

A discussion followed, and the PRESIDENT briefly replied.

LIVERPOOL MEDICAL INSTITUTION.—At the annual meeting held on Jan. 16th the following list of officers and members of council was adopted:—

President: W. Thelwall Thomas. Vice-Presidents: K. W. Monarrat, L. Morgan, Hubert Armstrong, and A. Craigmillie. Treasurer: B. Thurston Holland. General Secretary: W. Murray Cairns. Secretary of Ordinary Meetings: T. C. Little-Jones. Secretary of Pathological Meetings: H. Leith Murray. Librarian and Editor of the Journal: R. W. Mackenna. Council: J. H. Abram, F. S. Heaney, Mary B. Lee, C. J. Macalister, Courtenay Yorke, G. C. E. Simpson, F. W. Bailey, J. Martin Beattie, Owen Bowen, Frances Ivens, F. C. Larkin, and E. G. Sheldon. Auditors: Reginald T. Bailey and F. S. Heaney.

The annual report of the council for the year 1918 was presented and adopted, which showed that a programme of meetings similar to that of 1917 was successfully carried through, and that many medical members of the Overseas Forces and of the American Medical Corps had availed themselves of the hospitality of the institution. The fact is noted that two members of the institution, Dr. Bouverie McDonald and Dr. Nathan Raw, have been elected Members of Parliament in the recent Election. The report notes a certain shortage of members owing to the wastage through death and resignation during the war period, but speaks with certainty of the large influx of new members on the return of normal conditions.

EXETER CITY ASYLUM.—At the last meeting of the Exeter City Council it was decided, on the recommendation of the asylum committee, to increase the salary of Dr. G. Norton Bartlett by £125, with an additional £100 per annum next year. The committee alluded to Dr. Bartlett's excellent services and to his devotion in carrying on for three years without an assistant medical officer. The council decided to advertise for an assistant medical officer at a salary of £300 a year, with maintenance and lodging.

Reviews and Notices of Books.

Physical and Occupational Re-education of the Maimed. By Dr. JEAN CAMUS and Others. Authorised translation by Surgeon W. F. CASTLE, R.N. Illustrated. London: Baillière, Tindall, and Cox. 1918. Pp. 195. 5s.

Most of the chapters of this book have been contributed by various Frenchmen and Belgians who, by reason of their special experience, are qualified to write on the subject of their chapters; for the sake of completeness four chapters on the work being done in England are included. The result is a very readable book, although it presents some of the faults liable to occur in a symposium: the length of the chapter does not always correspond with the importance of the subject, and no attempt can be made to reconcile apparently conflicting views of the separate writers. Several of the chapters are very slight, especially those giving an outline of the features of various institutions. Among the most valuable parts of the book are those dealing with agricultural re-education and the work for the blinded. In France it is of the highest importance that agricultural labourers, who have composed 70 per cent. of the Army, should return to the land, where there was a dearth of labour before the war. The writers point out that agriculture has a large number of branches, each of which calls for its specialists. It is cheaper to live in the country, where, too, people are more willing to help one another.

The simplicity of the movements required in agricultural work makes this occupation suitable for men with artificial arms. A patient whose stump is sufficiently long to include the bony insertion of the deltoid muscle has complete control over any prosthesis, and can be made into a useful agricultural worker; even if the stump is useless, M. Boureau holds, there is always work on every large farm for a one-armed man. M. Lindemans, of Port Villez, points out that even the most mutilated soldier can earn a good income from poultry and rabbit breeding and beekeeping. MM. Nové-Josserand and Bourget provide a temporary arm and tool-holder for men to use while being taught farming at the limb-fitting centre; for permanent working hands they suggest that the men, in addition to the routine ring and hook hand, should also be provided with Boureau's swivel ring, Jullien's tool-holder and straps, the use of all of which can be learnt in a few days at the centre. M. Boureau describes a different set of working hands, and deals with the alterations necessary to adapt agricultural and harvest implements and the handles of ploughs and motor tractors for use by farms hands with an artificial arm. The use of motor and electric power to work the land will make up for the shortage of workers due to the war. Dr. Bourrillon is training agricultural mechanics at St. Maurice; after a six months' course the men are able to repair and drive motor tractors. He finds that for this occupation men require their full complement of limbs; slight paralysis is no bar; ankylosis of joints and shortening of limbs resulting from badly united fractures are among the commonest lesions of men who have undertaken this work successfully. Dr. Bourrillon includes agricultural work in the limited number of manual trades he considers can be carried on satisfactorily by a man with an artificial arm. He holds that only work which does not vary much or call for a constant change of tools can be carried on with the help of an artificial limb with a reasonable prospect of success; he considers that the contrivances which the men themselves devise to help in their work are often more useful than artificial limbs, and that it is the duty of medical men to make all such contrivances widely known. At Port Villez Dr. Nyns tells us that of 83 men with amputations of the arm 25 were working in the literary section to qualify for some minor administrative post, and 58 in the workshops. The most intelligent of the men are advised to take up clerical work; of the others, those skilful in the use of their remaining hand are taught printing, photography, drawing, and painting. Men from the country side take up farming and dairy work, while those who are not very intelligent are instructed in French polishing.

In France one half of the blinded soldiers return to farm work and make themselves useful in doing various jobs, such as cleaning out the yard, milking the cows, digging up the beets and potatoes and putting them into heaps, tossing the

hay, &c.; in wet weather and in their spare time they work at brush-making. Sir Arthur Pearson reminds us that the typewriter was originally invented to enable persons blind from infancy to write; practically all the men at St. Dunstan's learn typewriting in order to communicate with others by writing; he finds that the handwriting of a blind man inevitably deteriorates. Some of the men having learnt ordinary typewriting and shorthand-writing, a special typewriter with Braille writing being used, have been placed in situations as shorthand typists, where they are giving entire satisfaction. The employment of the blind teacher, who is not encouraged at ordinary workshops for the blind, has resulted in blinded men learning occupations in a quarter of the time usually supposed to be necessary. Dr. Ferriën calls attention to the work of the Association Valentin Haüy in providing books in Braille; he calls for volunteers to undertake the printing of books for the blind, and advises the use of a small Braille printing press invented by M. Vaughan.

The translator has carried out a useful piece of work well; in one or two places only, by attempting to make too literal a translation, has he rendered the text slightly difficult to follow.

Hygiene of the Eye. By WM. CAMPBELL POSEY, A.B., M.D. London and Philadelphia: J. B. Lippincott Company. 1918. Pp. 344. 18s.

THERE is room for a book on ocular hygiene, and this one fulfils the need satisfactorily, though we think it a pity that it should include several chapters on diseases of the eye which are hardly adapted to a book addressed to the lay public and insufficient as a guide to the general practitioner. Useful information on the prevention of eye diseases and on the proper care of the eyes will be found, however, in a chapter which deals with the protection of the eyes of the new-born; and the same may be said of chapters dealing with the importance of an efficient treatment of squint in young children (more stress might perhaps be laid on this), with refractive errors as corrected by glasses and the proper adjustment of spectacles, with the school curriculum suitable for high myopes and children with serious defects of sight (taken from Bishop Harman's paper on the subject), with the lighting and seating of schools, the protection of the eyes against industrial accidents, and the dangers to sight resulting from an excessive use of tobacco and alcohol. There is also a chapter on the education and employment of the blind, and the problem of preventing the spread of trachoma is touched upon. The illustrations are good.

Surgical Treatment: A Practical Treatise on the Therapy of Surgical Diseases for the Use of Practitioners and Students of Surgery. By JAMES PETER WARBASSE, M.D., formerly Attending Surgeon to the Methodist Episcopal Hospital, Brooklyn, New York. London and Philadelphia: W. B. Saunders Company. In three volumes, with 2400 illustrations. \$30.00. Vol. I. 1918. Pp. 947; 699 figures.

THIS is the first volume of an ambitious work, whose object, as stated in a discursive preface, is "to place in the hands of the surgeon the means for rendering help in every surgical condition under all circumstances." The author hopes, he says, "for the day when all surgeons who are entrusted with the lives of human beings shall be so equipped that they can apply the ideal treatment in all cases which come to their hands." We venture to doubt if such a Master of Surgery will ever exist. Those who have watched the progress of surgery during the last few years, and the increasing difficulty of anything like a complete grasp by any one mind of all that is commonly accepted as "general surgery," know that the years to come will make less and less possible the realisation of the author's dream; and however undesirable the increased tendency to specialisation may be, specialism will remain, and the ambition of a general surgeon, to give an example from the volume before us, to include in his accomplishments a complete acquaintance with diseases of the skin, is for ever doomed to disappointment. Indeed, this chapter of 30 pages on the diseases of the skin is an example of one of the chief defects of a book with such an encyclopædic aim as this: the anxiety lest anything should be omitted produces the result that much that is included is dealt with in a superficial manner.

This first volume deals with general principles of treatment, including aseptics and antiseptics, surgical materials, and anaesthesia; with wounds and operations, inflammations, and surgical infective diseases in general; with tumours; with diseases of the vascular system, diseases and injuries of bones and joints; with muscles, the skin, and nerves. Much of the information given is very up to date, but it is surprising to note, in the sections on wounds, on the blood-vessels, and on nerves, how little has been included of the vast experience gained by surgeons in four and a half years of war. The book is admirably got up and profusely illustrated, but a large proportion of the illustrations, particularly those of operations, are of a somewhat unpractical character.

We cannot avoid the conclusion, drawn from the first completed volume, that this "practical treatise" would have been far more practically useful if it had been less inclusive, nor can we admit that the subject of treatment ought to be so divorced from reference to pathology and symptomatology as has been thought advisable here. The discussion of indications or contra-indications and of prognosis in particular methods of treatment ought to form an important part of a work with such a declared aim—a much more important part than has here been accorded to it.

Gun-Shot Fractures of the Extremities. By JOSEPH A. BLAKE, Lieutenant-Colonel, U.S.M.C. With 40 illustrations. Paris: Masson et Cie. 1918. Pp. 136 + xi. 4 fr.

Colonel Blake has written a very concise and useful little book embodying the latest practice in the treatment of gunshot fractures and wounds of joints of the extremities. Although we may hope that the supply of these injuries has now ceased and that there will be no renewal of it, the book should prove useful for some years to come to those who have occasion to treat such wounds. In his preface Dr. Blake tells us that the work is the outcome of a request from the late Dr. Lewis A. Stimson to write a chapter in a book which he was compiling for the Council of National Defence in America, but Dr. Stimson's sudden death prevented its publication. All the most up-to-date and successful methods, such as those practised by Major Sinclair and those largely involving the use of Thomas's splints and the necessary cutting operations, are well and clearly described.

The section on the treatment of wounds of joints lays down the principles which have generally been found sound in recent British and French experience, and may be taken as a trustworthy guide. We must, however, differ with the author as regards the operative treatment of extensive injuries of the tarsus. If his advice "to resect the entire tarsus, removing the astragalus, but *always leaving the os calcis*" (the italics are ours) be followed, a stump will be left to which it is extremely difficult to fit an artificial foot, and which will be much less useful than that resulting from a Syme's amputation performed well above the malleoli with no redundancy of flap. Experience in limb-fitting hospitals during the last four years has well established this fact.

This little book is very well and clearly illustrated and the print and paper are alike good, and its small size will make it convenient for use.

Röntgen Technic (Diagnostic). By NORMAN C. PRINCE, M.D. Omaha, Nebraska. London: Henry Kimpton. 1918. Pp. 142.

A Manual of X Ray Technic. By ARTHUR C. CHRISTIE, Major, U.S. M.O.R.C. London and Philadelphia: J. B. Lippincott Company. 1918. Pp. 152. 12s. 6d.

THESE two manuals by American authors dealing with the same subject may be considered together. They both aim at the practice of a more or less uniform system of procedure in the examination of the various parts of the body. Major Christie's book is perhaps the more useful one for a beginner, inasmuch as it deals with the elementary principles more fully and has a chapter on X ray therapeutics. Dr. Prince's book is confined to the diagnostic side of the subject and is adapted to the use of those who are more advanced. The various dispositions of the patient and apparatus are shown in an excellent series of reproductions from photographs, full technical details accompanying each. It is not intended to make any comparison in these comments, as any choice between the two would be determined by personal taste and requirements.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 1, 1919.

Medicine and the State.

WE publish this week a paper by Sir HENRY MORRIS, who pleads powerfully and practically for medical unanimity on professional questions and for the display of public spirit among medical men, so that the relations between the State and the doctor can be placed upon a logical basis. Sir HENRY MORRIS's plea is, in essence, for the formation of a medical federation which should be an unattached advisory board at the disposal of the Government on all medical questions, and he urges that this board should be created now, and that it should be thoroughly representative of the medical corporations, the medical societies, and of all ranks of medical practice. He marshals the arguments for the creation of such a body with the force and skill to be expected from him. It would certainly be quite possible, as all readers of THE LANCET will perceive, to dissent from his criticism of those who have criticised the Royal Colleges, while there are passages in this able advancement of professional unanimity to which many interested in public medical service might fairly take exception; but all that is only to say that Sir HENRY MORRIS has been honest in his advocacy and has not hidden his personal views, even while arguing in a wholly impersonal manner. He shows that the medical profession and the public alike have nothing but good to expect from medical unanimity.

This is very different from the spirit exhibited by some medical reformers who seem to see in medical unanimity a step towards the formation of a medical trust, and to anticipate with gusto the day when such a trust will be powerful enough to exact terms from the State. Such would-be reformers are dreamers. This position will never be attained and it is a thoroughly anti-social instinct which desires it. A letter from a well-known physician, who prefers to appear as F.R.C.P., takes a fine and lofty stand in respect of professional ideals and duties, but simultaneously he conceives that those duties should be rendered to the State out of high conviction and not in accordance with a material responsibility towards the State. F.R.C.P. points out correctly that the original efforts of THE LANCET were towards unification of the profession, and expresses his fears that the profession is "in danger of fatally dissolving an organic whole into its component parts" under the stress of increased knowledge and ill-directed specialism. He desires unification, but his view of the relation of the State to medicine is the pessimistic one that the intrusion of the State into medical affairs tends to destroy the individuality and independence of the practitioner and to impair regard for the

patient as an individual. What form of unification is that in which the State is to play no part? The whole population of Great Britain is concerned in the quality of the national medical service and in the legislative and social conditions under which that service is rendered. The medical profession, which ministers to the public in an important, intimate, and ungrudging fashion, has a right to expect that by the legislation now impending the calling of medicine will be placed upon a more secure and dignified basis. Laws cannot, and should not, be made in response to any sentimental claim, but the new Ministry of Health is a recognition, once and for all, of this truth—so well known to those who can think and see—that the health of a nation is its greatest national asset. But when the State enters into relations with medicine for the national good it cannot be regarded as an intruder even in our individualistic calling.

To secure proper relations between medicine and the State the Medical Parliamentary Committee was founded. At the last meeting of this Committee it was announced that Sir WATSON CHEYNE had accepted the chairmanship of the Committee rendered vacant by the resignation of Sir HENRY MORRIS, and at the same time the objects of the Committee were definitely set out. These will be found on p. 190 of this week's issue of THE LANCET, and it will be seen that they largely meet the position considered by Sir HENRY MORRIS as necessary when advocating the creation of a medical federation to act as an advisory committee to express "its matured responsible judgments and its deliberate unified conclusions upon those matters as to which it ought to be both the duty and the privilege of the profession to give counsel and render service for the benefit of the community at large." The Medical Parliamentary Committee, however, possesses objects which require for their justification a completely representative constitution. Such a constitution is as yet wanting, for the Royal Colleges are unrepresented, and the British Medical Association holds aloof. But with its foundations truly laid, its chairman a powerful voice in the opinions of the country, and its executive working steadily and unselfishly towards large ends, the promise of a representative character is a very fair one. If the Medical Parliamentary Committee, having an obvious desire to labour in amity with all men and movements that work for national health, does not succeed in federating medical interests in accord with its proposed scope, there would seem little chance of any similar movement being more fortunate. Elsewhere there is announced the holding of a meeting in London on Sunday next with the view of starting a new professional league in behalf of medicine. At the meeting a resolution will be proposed stating that for divers reasons "the time has arrived when a body representative of the whole profession should be established to watch its interests and be prepared to act in an advisory capacity as occasion demands." Surely such doubling of energies can be avoided and coöperation substituted.

War Pensioners in Civil Hospitals.

EVERY period of transition is apt to present new problems, and the truth of this generalisation has recently been prominently brought to notice in connexion with the treatment of war pensioners. The discussion at a general meeting of the Royal Society of Medicine, of which we publish a report, has done good service in clearly setting forth the present conditions under which war pensioners are admitted into and treated in civil hospitals, thus affording a satisfactory basis for suggestions and recommendations. The answers to a series of inquiries widely circulated showed that no uniform system was adopted by various hospitals. While the Ministry of Pensions had tentatively offered certain terms, the offer had been received by different institutions in a way that might tend to confuse both the charitable public and the Minister of Pensions. An initial informal discussion had already disclosed the need of fuller investigation, but the divergences were only clearly realised when the replies to the inquiry were carefully tabulated. It was then seen that the present system is chaotic. The institutions concerned are still wavering about the need of any special arrangements for war pensioners. Some are so happily situated that they do not desire any remuneration; others hesitate over the allocation of the payments, and have not yet realised whether the amount suggested is intended to provide for the necessary outlay for working expenses independently of any payment to the medical staff, or whether such remuneration had been contemplated in the original proposal.

The evolution of the present system has been fairly simple, the national obligation for the treatment of those incapacitated through the war being recognised from the outset. This provision was primarily supplied by the military hospitals, with medical, surgical, and nursing staff provided from national funds through the War Office. In these hospitals, and in their attached auxiliary hospitals, treatment was continued until it was obvious that nothing further could be done to ensure a return to military service of any description, when the man would appear before a medical board and be discharged from the army. This conversion of a soldier into a pensioner did not necessarily imply that a "cure" had been effected. Occasionally the pensioner might be fit to resume some form of civil occupation on leaving the hospital, but frequently he required further treatment, in the wards, in the out-patient department, or in some special section attached to the hospital. The question by whom such treatment should be supplied soon presented itself, and for a long time it remained uncertain whether pensioners should be provided for by the military authorities, by the Pensions Board, or by the civil hospitals as part of the charitable objects for which they primarily exist. In early days military hospitals were utilised for this purpose of further treatment, the necessary official authority being obtained, while this authority was only granted when the need for treatment was distinctly the outcome of the original war disability for which the pensioner had

left the service. The advantage of this system was that the State had already made provision of equipment and personnel; the disadvantage was that the beds, which were urgently needed for sick and wounded coming from the front, soon became blocked with pensioners. On taking over responsibility for their treatment, the alternatives for the Ministry of Pensions to consider were to create fresh institutions, which would involve delay and great expenditure, or to negotiate with the civil hospitals for the reception of pensioners in lieu of soldiers. The present position formed the subject of discussion, and many interesting facts and opinions were elicited from representatives of hospital committees and of hospital staffs. Many considered that ward treatment would rarely be necessary, that the numbers requiring admission would not justify the provision of special wards, and that discipline might be easier if these men were treated in general wards. Others urged that from the chronic nature of their troubles these patients would not be suitable for teaching or demonstration purposes like others in adjoining beds, and that the fact of payment being made for them might constitute a cause of trouble in a general ward. It will be noted that this question was left open at the end of the discussion while agreement was reached as to the conditions for out-patient treatment and for payment of those concerned therein. Mr. H. J. WARING, who opened the discussion and moved the resolutions, and Sir NESTOR TIRARD, who seconded them, were equally emphatic about the need of special out-patient clinics for pensioners, who cannot be expected to attend at the ordinary hours, and they both urged that some reasonable payment should be made to those who had charge of these clinics. The payment of the staff of a hospital is one of those subjects which ever affords room for differences of opinion. The old arguments made their appearance in due course, and the position was again affirmed that medical men do not pose as philanthropists who scorn payment in their desire to benefit the hospital patient, but consider that the experience and the opportunity of teaching at the hospitals afford adequate compensation. Now, while this is true for the general work of a hospital, it undoubtedly has no bearing on a clinic for pensioners, and if the terms suggested for pensioners as in-patients were correctly stated it would seem to have been contemplated that the medical staff should receive an honorarium. The terms are far higher than those hitherto paid by the military authorities for the maintenance and treatment of sick and wounded soldiers from the front.

It is not so clear that the conditions for admission have been fully agreed upon by the Local Pensions Committees and by the hospital authorities. If special wards or special beds are set aside for the reception of pensioners it may be feared that the recommendation for in-patient treatment may be regarded as equivalent to an order for admission. Ever since hospitals have been established the system of subscribers' letters has been a source of annoyance both to the hospital and to the subscriber. The

hospital naturally desires to sift the cases and to admit only those likely to derive greater benefit than could be afforded by out-patient treatment. The subscriber considers that the recommendation has been wasted if his nominee is not admitted to the wards. To some extent this comparison between pensioners and civil patients may not apply if the Local Pensions Committee act solely on the advice of a medical referee; but even then, as the discussion at the Royal Society of Medicine showed, it was contemplated that all such cases should be sifted in an out-patient or admission room, and the suitability for ward treatment determined in the same way as for ordinary civilians. Under such a system it is highly probable that the number of pensioners found suitable for admission will be extremely small when there is great pressure on space; while it may rise in large institutions with greater elasticity of accommodation, or with greater need of the financial assistance afforded by the Ministry of Pensions. With regard to out-patient clinics there was no doubt that the resolutions of the meeting accurately indicated the feeling of the meeting that separate clinics should be held, and that those conducting them should receive adequate remuneration. Arguments in favour of this course were adduced by nearly every one who took part in the discussion, though Dr. SYDNEY PHILLIPS spoke rather vaguely of there being no essential difference between pensioners and civilians. The qualification for admission to the pensioners' clinic should necessarily be that the need arises directly from some condition resulting from active service, and this condition, in the majority of cases, has already found expression in the recommendation of the invaliding medical board. The Local Pensions Committees doubtless will be guided by these recommendations, and will not send to the hospitals men who, although pensioners, have fresh diseases or ailments which have no relation to their military service. While it hardly seems necessary to advocate that the Pensions Minister should establish his own institutions and thus rid the hospitals of the incubus of treating pensioners, we believe that many of the problems involved can only be adequately dealt with by free discussion, guided by actual experience. For the present it may suffice to say that a public service has been rendered by definite pronouncement in favour of the separation of the pensioner class from the ordinary run of out-patients, and by the realisation that in this work of national importance, for which the nation is prepared to pay, reasonable remuneration should be given to those to whom it is entrusted.

THE POOR-LAW DIETARY.—In view of the intimation by the Ministry of Food that it is no longer desired to enforce even in institutions the restrictions on most unrationed articles, Poor-Law authorities may now revert to the use of the dietary tables in force before the introduction of rationing. It is still obligatory to keep within the scale in the case of rationed articles—butter, meat, sugar, fats, and jam—and the present allowances of milk and cheese are only to be increased with the concurrence of the Local Food Control Committee.

Annotations.

"*Ne quid nlmis.*"

GREAT BRITAIN AND DENMARK.

OFFICERS of the R.A.M.C. recently with the British Military Mission in Denmark speak with enthusiasm of the welcome they received in that country. The Royal Family, officials, and private persons alike went out of their way to show hospitality, not only to the prisoners of war returning from Germany, but also to the staff sent out from England to arrange for their repatriation. For more than four years Denmark has necessarily avoided expressing her traditional admiration and affection for our country, but since the armistice she has felt free to show the warmth of her sympathy. As a consequence our soldiers returning through Denmark have enjoyed almost embarrassing demonstrations of friendship, and "Rule Britannia" is received with enthusiasm in all the restaurants and places of amusement of Copenhagen. Early in January the staff of the Fredericksburg Hospital gave a dinner in honour of the medical members of the British Mission, and this convivial meeting was much enjoyed both by guests and hosts. During the evening Dr. Carl Jørgensen toasted the visitors in a graceful speech. He told how the youths of Denmark from their earliest days were taught to venerate the country of Shakespeare and Byron, of Dickens and Kipling, and how Danish medical men looked with affection to the home of Jenner, Lister, Moynihan, and Mackenzie. He continued: "Five years ago we admired you as the most free people of Europe because you refrained from conscription. Later we had to admire still more because England submitted to the raising of that glorious Army now returning victorious from the most terrible war in history." The English officers made fitting replies to this very flattering address, showing that their relations with Danish colleagues in the prisoners' camps and on social occasions throughout the period of repatriation duty were most cordial. Most medical men in Denmark have a fair knowledge of English, and in conversation many of them expressed the wish that more opportunities for post-graduate work should be offered them in England. It is good to know that through the activity of the Inter-Allied Fellowship of Medicine London can now offer them a good deal of what they seek in this direction. They also mentioned a desire that English medical books and periodicals should be made more easily available for the profession in Denmark. It is to be hoped that something may be done to reciprocate the desire for closer relations with their English confrères which was thus so unmistakably demonstrated by Danish medical men.

THE UTILISATION OF RED CROSS AMBULANCES.

THE disposal of the many thousands of Red Cross ambulance wagons and lorries which will fall into desuetude when peace is signed is a public question of some importance. The scheme put forward by the joint committee of the British Red Cross Society and the Order of St. John of Jerusalem to return the cars to the districts from which they were presented is practical. The plan adopted will, no doubt, be that the more populous districts will have the first claim; but it must be remembered that these are usually in some measure

provided with ambulance wagons, although no doubt imperfectly. On the other hand, the more sparsely populated districts are for the most part ill provided with, and, in fact, in most cases not provided at all with, any means of conveying the injured and sick. There are many parts of the country where no ambulance wagons are available within a radius of a score or more of miles, and it is especially to such districts that help in the direction intended should be given. It should be seen to that every country district should have a means of transport within 20 miles at least of any given point; that would be the area of operation of any one wagon and would extend to a diameter of 40 miles of country. The storage of the wagon and the expenses in connexion with maintenance should be provided by the district, either by a small charge on the rates or by public subscriptions. The driver for these wagons would only occasionally be called upon, and the permanent employment of a driver would not be a public charge, for volunteers would be found in plenty for such work; these volunteers could be organised for spells of duty alternately, a number of names being kept in reserve, so that a driver would be always available. For those that can pay a charge should be made for the use of the ambulance wagon to cover expenses to some extent, while the poor should have the benefit of the transport. The wagons would be most useful to convey persons who have to travel to a large town for a surgical operation, and who have in the meantime to travel by train—a most unsuitable mode of transport in many cases. For cases of infection that have to be conveyed to an infectious diseases hospital many parts of the country are well provided, but, on the other hand, many are not so equipped, and it should be a primary consideration of those dealing with this scheme to see to it that this defect is remedied. The infectious diseases wagon would not, of course, be available for general use, but kept for the special use of conveying cases of infectious ailments. If only one wagon can be had it might be necessary to decide whether the one for infectious diseases should have the primary consideration. The work in connexion with the scheme would be met by the members of the Humanitarian Corps in course of formation, whose purpose is to provide "first aid to those in need," be the nature of that "need" what it may.

THE SYNDROME OF THE FORAMEN LACERUM POSTERIUS.

THE ninth, tenth, and eleventh cranial nerves pierce the dura mater close together and pass through the middle division of the jugular foramen in arithmetical order antero-posteriorly. Immediately in front of the ninth is the inferior petrosal sinus; immediately behind the eleventh is the jugular vein at its commencement. A membranous sheath, sometimes a minute osseous spicule, is all that separates the vessels from the nerves. It should also be noted that the three nerve trunks are in oblique alignment, so that the spinal accessory nerve is external to the vagus and the vagus to the glosso-pharyngeal. Further, the internal carotid artery is but a few millimetres anterior to the jugular foramen. Below the exit from the cranial cavity the three nerves begin to separate almost at once, the eleventh inclining backward over or behind the internal jugular vein and the ninth inclining forwards over the internal carotid, while the vagus

proceeds vertically downwards. Unlikely or even incredible as it might well have appeared before the experiences of the war, a number of cases have now been put on record where a bullet has severed or injured these three cranial nerves at their point of emergence without touching either of the important vessels in their immediate proximity. In such cases the course of the projectile must be approximately from a point behind the mastoid obliquely across the base of the skull to an exit towards the inferior edge of the orbit on the opposite side, or inversely. To Dr. Maurice Vernet,¹ of the Centre d'Oto-rhino-laryngologie at Marseilles, is due the credit of having drawn attention to this syndrome and of having contributed materially to our knowledge both of its clinical entity and of certain interesting points connected with the distribution of the individual nerves concerned. To take the former first; Dr. Vernet has shown that the main features of the syndrome consist subjectively of the following functional triad: (1) nasal regurgitation of liquids (soft palate paralysis); (2) difficulty in deglutition of solids (pharyngeal paralysis); (3) hoarseness (laryngeal paralysis). This does not, of course, exhaust the syndrome, while, objectively, much more can be determined. Taking the nerves individually, Dr. Vernet adduces evidence to show that the motor distribution of the glosso-pharyngeal includes, *inter alia*, the superior constrictor of the pharynx, which lies behind the pharyngeal mucosa visible on the posterior wall of the pharynx when the mouth is open. Accordingly, the result of unilateral paralysis of the superior constrictor is actually visible in a curtain movement of the pharyngeal wall to the unparalysed side at the commencement of deglutition. Functionally the dysphagia consists in difficulty with solids through failure in reduction of the calibre of the passage sufficient to grip the bolus of food. On the afferent side taste disorders of the posterior part of the tongue always coexist with the motor paralysis when the nerve is severely injured, but may be absent in case of superficial injury or slight compression; hence the diagnostic value of the curtain movement of the upper pharynx. As far as the vagus nerve is concerned, the chief part of Dr. Vernet's work on this subject has been directed to showing that it ought to be considered (1) as a nerve irrelevant to all palato-pharyngo-laryngeal motor innervation, the motor fibres of the nerve really deriving from the internal branch of the spinal accessory; (2) as an entirely sensory nerve, even the cardio-inhibitory branches being relegated to the internal branch of the eleventh. There are, in our view, several difficulties in the way of subscribing to the whole of Dr. Vernet's contentions in respect of the vagus, but we may note the clinical features of impairment of the sensory vagus and their part in the complete syndrome of the jugular foramen. They are constituted by: (1) defect of ordinary sensibility in the area of the soft palate, pharynx, larynx, and of the auricular branch—viz., a small area round the external auditory meatus (when the nerve is irritated there is hyperæsthesia or actual neuralgia in the same regions); (2) disorders of salivation, consisting of dryness of the mouth or, if the nerve is irritated, hypersecretion of saliva; (3) coughing fits, not unlike pertussis, in irritation cases; (4) respiratory disturbance in the form chiefly of exertion-dyspnoea or, in inhibition cases, dyspnoea of a pseudo-

¹ Paris Médical, December, 1916; January and March, 1917.

asthmatic type; (5) pulmonary disorders in the form of recurring congestions. As already noticed, Dr. Vernet attributes to the spinal accessory, via its internal branch, the innervation of, *inter alia*, the middle and inferior constrictors of the pharynx, the muscles of the palate and vocal cords. Whatever be the final decision on the interesting questions raised by Dr. Vernet his painstaking work serves to throw into relief the lacunæ in our exact knowledge of the supply and function of these important cranial nerves, and may well be utilised as an appropriate basis for further research.

LOCAL GOVERNMENT BOARD FOOD INSPECTION.

IN an extract, published separately, from the Annual Report of the Medical Officer of the Local Government Board for 1917-18 Dr. A. W. J. MacFadden gives a brief statement as to the work of inspectors of foods during that period. This important branch of the Medical Department has continued the work of supervising the preparation of food materials for the Army which was commenced on behalf of the War Department at the outbreak of the war. During the year the work was considerably increased owing to the decision of the Army Council to provide home-killed meat for the troops in this country, and arrangements were made by the branch for providing the necessary abattoirs, equipment, and staff of meat inspectors for this purpose. The work of the year included the investigation of several outbreaks of bacterial poisoning. In one of these occurring at Brighton Dr. W. G. Savage isolated an organism of a type which has not hitherto been met with in cases of this kind. A full account of this outbreak is to appear in a forthcoming number of the *Journal of Hygiene*. A paragraph on the importation of liquid eggs from China is of interest. Prior to the war it appears that small quantities of this commodity were imported into this country, the bulk of it going to Germany. After the outbreak of war, however, large consignments arrived at certain ports in this country as cargoes in prize ships, and since then large quantities have been imported in the ordinary course of trade. These products occasionally arrive in the form of whole egg mixed, but usually the yolk and albumin are sent separately. The City of London analyst found them to contain boric acid in amounts varying from 1.35 to 2.08 per cent. These results were confirmed by the Government chemist. As is pointed out, when used for the manufacture of cakes and biscuits the amount of boric acid in the finished food as eaten is reduced to about 5 grains per pound. When, however, the eggs became available to the general public for use in milk puddings, pancakes, and so forth, the amount of boric acid consumed by the individual would be considerable. There is also reason for believing that large quantities of these eggs have been used for some time in restaurants. Dr. MacFadden says that—

"the employment of these boricised products for domestic and restaurant use is open to very serious objection,"

and concludes that—

"As the importation of egg-products from abroad will necessarily increase in the future, it would be very advantageous, both from the point of view of health of the consumer and of the economy in shipping space, if arrangements could be made for the product to be shipped as dried eggs instead of in liquid form."

Such a product on the market is, of course, well known, and we have had occasion to report in our

analytical columns that the eggs were so satisfactorily dried as to leave the yolk and albumin uncoagulated. The material, in fact, makes a good omelette, which is about as severe a test as can be tried.

FELLOWSHIP OF MEDICINE: EMERGENCY POST-GRADUATE FACILITIES.

THE Fellowship of Medicine has arranged with different medical schools in London for an emergency post-graduate course of three months for qualified medical men from the R.N., R.A.M.C., and R.A.F., from the Dominions, the United States, and Allies. This course will admit to the general practice of the institutions, clinical instruction in the wards and out-patient departments, lectures and demonstrations, post-mortem demonstrations, laboratory work, &c. Tickets for the whole course, or for one or two months, can now be issued at the rate of £3 10s. for each month. These can be obtained from the Secretary to the Fellowship at 1, Wimpole-street, W.1, the house of the Royal Society of Medicine, to which the Fellowship is kindly given access.

"THE BIRTHPLACE OF GYNÆCOLOGY."

THE Woman's Hospital of the State of New York was founded in 1855, and in a volume of collected papers¹ by members of the surgical board Dr. J. R. Goffe claims for the hospital the distinction of being the first of its kind in the world—namely, founded by women for the exclusive use of women. The hospital owes its origin to the indefatigable labours of the women of New York, to whom Dr. Marion Sims, the father of gynæcology, appealed on behalf of women suffering from gynæcological disorders. But it is nevertheless somewhat of a blow to find no women upon its imposing active staff, with the exception of a junior attending surgeon and the superintendent house officer. From Dr. Goffe's historical sketch we learn that Dr. Sims, after many failures, had devised a means of overcoming the deplorable results of vesico-vaginal fistula which so often followed on long and difficult labours. Forceps were then not in general use to hasten delivery at this stage. Dr. Sims's investigations were carried out at Montgomery, Alabama, where he lived, but, seeking a change of climate on account of his health, he took up his abode in New York, and it was here that the Woman's Hospital was opened in May, 1855, with accommodation for 44 beds. In the following year the executive committee were able to report that 60 patients had been received, 21 of whom had been discharged perfectly cured, and that all except one of the patients still remaining in the hospital were pronounced by the resident surgeon curable. Twelve years later another building was erected with accommodation for 75 patients and staff, and a further enlargement took place in 1877. The present building was ready for occupation in 1906, and its maternity department counts as a model of what such a department should be. During the year 1917 600 confinement cases were under care. Several features are characteristic of the enlightened spirit of this great institution. Interchange of thought among the medical and teaching staff is provided for by a society the object of which is to cultivate social intimacy, maintain interest in the

¹ A Report on the Scientific Work of the Surgical Staff of the Woman's Hospital in the State of New York. Edited by Herman Grad, M.D. New York, 1918.

institution, bring out matters of scientific value in the special line of the hospital's work, and advance the science of gynaecology. Its active membership numbers 60. The Social Service Department assists the work of the staff by instructing patients in their own homes.

DRAFT regulations for nursery schools, dated Dec. 31st, 1918, have just been issued (H.M. Stationery Office, G. 10, price 1d.) by the Board of Education laying down very carefully the standards of physical care required to meet modern hygienic demands.

THE death is announced in Birmingham of Sir James Sawyer, ex-professor of medicine at Queen's College and consulting physician to Queen's Hospital, Birmingham. He was in his seventy-fifth year.

Hunterian lectures are to be delivered at the Royal College of Surgeons of England (Feb. 3rd) by Professor A. J. Walton on the Surgery of the Spinal Cord in Peace and War; (Feb. 5th) by Professor David Ligat on the Significance and Surgical Value of Certain Abdominal Reflexes; and (Feb. 7th) by Professor G. Taylor on Abdominal Injuries of Warfare. The time in each case is 5 P.M.

THE annual dinner of the Hunterian Society will be held at Cannon-street Hotel on Wednesday next, Feb. 5th, at 7 P.M., Dr. Langdon Brown, the President, in the chair. The annual oration will be delivered by Mr. Hugh Lett on Wednesday, Feb. 12th, at 9 P.M., at the house of the Royal Society of Medicine. The subject will be "John Hunter and His Influence on Urinary Surgery." All members of the profession are invited to be present.

THE LANCET, AUGUST 24TH, 1918.

THE Manager of THE LANCET would like to re-purchase or to receive copies of the issue of August 24th for which readers may have no further use, to enable him to replace copies for libraries and institutions in India and the East which were lost at sea owing to enemy action. Such copies should please be addressed to him at 423, Strand, London, W.C. 2.

THE LANCET, VOL. II, 1918: THE INDEX.

THE Index and Title-page to the volume of THE LANCET which was completed with the issue of Dec. 28th, 1918, is now ready, and copies have been supplied gratis to those subscribers who have, up to Jan. 30th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. 2. Such applications should be sent in at once.

THE LATE DR. R. A. BUNTINE, M.L.A.—A memorial service was arranged to be held in the City Hall, Pietermaritzburg, Natal, on Sunday, Oct. 13th, in memory of six victims of the torpedoing of the *Galway Castle* on Sept. 10th, among whom were Dr. R. A. Buntine and his elder daughter. The ceremony was, however, postponed until Dec. 15th owing to the influenza epidemic. As a medical man Dr. Buntine had endeared himself to the town and district by his skill and the kindly cheeriness of his temperament. To the poor he gave of his best without stint or hope of reward. His political influence was growing, and he had begun to make his mark in the Union Parliament.

MEDICAL PARLIAMENTARY COMMITTEE.

A MEETING of the Executive Subcommittee of the Medical Parliamentary Committee was held at the College of Ambulance on Jan. 24th, when the resignation of Sir HENRY MORRIS from the chairmanship was announced and the election to the post of Sir W. WATSON CHEYNE was unanimously welcomed. Sir Henry Morris's letter of resignation explained the private grounds upon which he was acting, and expressed his full sympathy with the work and objects of the Committee, whose formation owes so much to his preliminary energies and fostering care. The feeling of the Executive Subcommittee, recorded in a unanimous vote, was that the debt of the Medical Parliamentary Committee to Sir Henry Morris was extremely great.

Sir WATSON CHEYNE, on taking the chair, pointed out how necessary it was that the objects of the Committee should be well defined, as well as its constitution representative, and he indicated very clearly to the meeting the main functions of such a consultative body as he believed would be most valuable. He would regard, he said, the Medical Parliamentary Committee, though one of its objects might be to promote the election of medical men to Parliament, as primarily a body to which the medical men in the House of Commons might turn for detailed information upon medical points as they arose in the course of Parliamentary work, whether in the discussion of Bills in the House or in Committee work. An interesting debate took place, at which it was decided that the following should be adopted as definitely the programme of the Medical Parliamentary Committee:—

Origin and Objects of the Medical Parliamentary Committee.

A large meeting open to the whole medical profession was held at Steinway Hall on Oct. 1st, 1918. The object of those who called this meeting was to give the profession the opportunity of emphasising the fact that it is the duty of medical men to make every endeavour, in the interests of the community, to assist the State in all matters which promote the health of the nation.

It was agreed that for this purpose unity of the profession is essential, and that in order that the considered views of responsible medical men and medical organisations may be adequately placed before the public it is necessary that a greater number of medical men should sit in the House of Commons. Consequently it was decided to take all steps to effect this increase.

With these ends in view a committee was appointed with power to add to its numbers. This Committee is now known as the Medical Parliamentary Committee. Its present composition makes it representative of all types of medical practitioner, and it is hoped that in time the Committee will represent every organisation in the profession.

Thus the main object of the Medical Parliamentary Committee is to endeavour to assist in placing the knowledge and experience of the medical profession at the disposal of the Government and of medical Members of Parliament for the purpose of guiding legislation on preventive and curative medicine in such a way that the health of the community may be safeguarded and placed in the position to which modern science entitles it.

While reserving the right to express opinions on matters affecting the national health, the Committee has no politics, and recognises that individuals must be left quite free to hold and pursue their personal convictions on general political questions.

In order to achieve the objects set out above the Committee proposes: (a) To keep in touch with the Government for the purpose of urging the need for medical representation. (b) To keep in touch with the Party Whips with a view to introducing the names of suitable medical candidates. (c) To keep in touch with the various medical bodies which are pursuing medico-political activities. (d) To keep in touch with medical Members of Parliament. (e) To keep in touch with possible medical candidates. (f) To bring together members of the profession interested in national health legislation and the medical Members of the House of Commons for the exchange of views.

Dr. C. BUTTAR, honorary secretary, pointed out that a meeting of the medical profession had been announced for Sunday next, Feb. 2nd, at Wigmore Hall, having as its object "the constitution of a body representative of the whole profession, to watch its interests, and to be prepared to act in an advisory capacity as occasion demands." It was felt that the creation of such a new body would imply a repetition of work done by the Medical Parliamentary Committee, now developing into a truly democratic institution.

It was decided that, as a means of bringing the profession into closer touch with the new medical Members of Parliament, the Members should be invited to dine, together with the members of the Health Ministry Conference which has been constituted from the Royal Colleges, the Royal Society of Medicine, and the British Medical Association. Accordingly it has been arranged that a dinner will be held at the Café Royal, Regent-street, on Wednesday, Feb. 12th, at 7.30 P.M.

The Right Hon. Christopher Addison, M.P., will be the principal guest, and the dinner will be presided over by the chairman, Sir William Watson Cheyne, M.P.

MATERNITY AND CHILD WELFARE.

Mothers' Pensions in the United States of America.

American public opinion was considerably influenced by the publication in 1909 of the Report of the Royal Commission on the Poor-law in England, with its recommendations as regards outdoor relief to widows, and attention has gradually turned to the question of carrying out the scheme as a public measure. Opinions differ as to the need there is for such help. It was asserted that a large number of children were being put into institutions who, if the means were available, might be better and more economically brought up in their own homes; but as a result of an inquiry made in New York City by Dr. E. T. Devine, and published in 1913, it appeared that only about 4 per cent. of the children placed in institutions in the year of inquiry might have been kept at home with some assistance. It was considered that if a scheme of mothers' pensions were introduced the number of cases of juvenile delinquency would be reduced, and on this subject the statistics compiled by the Chicago School of Civics of cases dealt with at the Juvenile Court in Cook County for the 10 years 1899 to 1909 are instructive. It was found that 34 per cent. of the children came from families lacking the care of one or both parents. The figures quoted in the report of the Bureau of Municipal Research are as follows: Father dead, 14.5 per cent.; mother dead, 9.6 per cent.; both parents dead, 3.7 per cent.; parents separated or divorced, 1.9 per cent.; family deserted by father, 2.0 per cent.; family deserted by mother, 0.8 per cent.; family deserted by both parents, 1.0 per cent.; one or both parents in prison, 0.2 per cent.; one or both parents insane or in institutions, 0.3 per cent. The relatively large number of cases of juvenile delinquency in families in which the father was dead appeared to be due to the fact that the mother frequently tried to be the wage-earner as well as look after the home, with unsatisfactory results to the children.

The object of all the laws for the grant of mothers' pensions is to provide means for preserving ordinary home conditions for dependent children when, on account of death or disability, the usual means of support are wanting; and to secure that the children shall be cared for by their own mothers instead of being placed in institutions or under the care of foster-parents. With the exception of a few States, the laws apply only to mothers, and in a few cases the pensions are expressly limited to widows. Divorced and deserted wives are occasionally included, and in Massachusetts it is left to administrative discretion to deal with these cases. In Michigan alone are unmarried mothers specially included in the law. Need is, without exception, the basis of assistance in all the laws, but in some laws definitions are added, dealing with cases in which the woman owns property, &c. Practically all the laws require the mother to be a fit person, morally and physically, to have care of her children. In seven States it is made a condition that the children live with the mother and that she does not work regularly away from home. In other cases she may obtain, and is encouraged to obtain, part-time employment. The lowest age-limit at which the pension ceases to be allowed on behalf of the child is 14 years. More than half of the laws provide for administration by the Juvenile or County Court. In one case only, Massachusetts, was it made a function of the existing Poor-law officers, under the control of the State Board of Charities. In a few States the payment of mothers' pensions is carried out by the education authorities. Under some laws a new organisation is set up. Periodical supervision is required in all cases, either monthly, quarterly, or half-yearly visits, or general supervision. In the majority of cases the funds for the pension are derived from the county treasury, but in some States they are provided partly out of county funds and partly by means of a State grant.

The methods of fixing the amount of the grant fall in practice into three groups: (1) To allow the mother a monthly sum equal to the difference between her average normal income and the average standard of expenditure, provided that the limits of the law are not exceeded; (2) to allow the mother the flat rate for each child fixed by the law; (3) to allow an amount for each child according to a scale in which the amount is less for each additional child after the first. The last of these methods is the one which prevails in most States. As to administrative working, in Massachusetts it

appears to have been considered that if a new group of workers were appointed to carry out the administration of mothers' pensions the accumulated experience of the already existing Poor-law officers would not be utilised, as, it is stated, cooperation between the two groups was not anticipated. The administration of the new law was therefore, as we have seen, made a function of the existing Poor-law officers under the control of the State Board of Charities. The law specially provides that the pensions are to be non-pauper assistance. This is the only State in which the Poor-law officers are entrusted with the work. Elsewhere the general tendency has been to reduce their activities and to put the administration of mothers' pensions under some other authority. Thus in New York State in 1915 the administration of funds and investigation of cases were to be performed by a specially created body, the Board of Child Welfare, the members of which are generally appointed by the county judges, and in New York City by the mayor. The report of the Bureau of Municipal Research says that "the chief defect is lack of strong central control, such as the Massachusetts law provides for. Apart from this the New York law offers another illustration of American legislative tendency to create new organs of government without adjusting them to earlier and older organs, so that duplicate machinery is created and responsibility thus diffused. Under the New York law widows' relief is not vested solely in the boards of child welfare; the Poor-law officers—the overseers—may likewise grant such relief, and, indeed, they compete in some instances with the newer Child Welfare Board. Finally, the New York Boards of Child Welfare are irresponsible agencies divorced through their method of appointment and retirement from control either of the executive or of the electorate." The need for adequate supervision is emphasised in many reports on the working of the laws.

In the report of the Bureau of Municipal Research it is suggested that a reasonable solution of the problem of employment for mothers is that in most cases the mothers should be expected to supplement the pension allowance by earnings. Exceptions should be made where there is a large family of young children and where the woman is not strong. Certain kinds of occupation should be prohibited. One of the most practical forms of work appears to be office cleaning, as the hours can generally be arranged to meet household needs. The wages, however, are very low and the work often arduous.

In the instructions to the Poor-law officers (overseers of the poor) issued by the State Board of Charity of Massachusetts in November, 1913, it is said that "there are undoubtedly relatives or other reliable persons living with many of these families who can give the dependant children proper attention during the mother's absence. To insist that the mother shall not work regardless of home conditions would tend to discourage that desire for thrift and independence which is an essential element in society. The policy should be stimulative and constructive rather than destructive." The general practice of the State is to limit the work to three days a week.

Effects of the mothers' pension system.—The danger that mothers' pensions may lead to the weakening of family obligation and the lessening of family responsibility is fully recognised. Another danger referred to in the Report of the Bureau of Municipal Research and elsewhere is that by the extension of the system of public subsidies employers of labour may be led to underpay their workers, relying on social legislation to make up the deficiency. The direct results of the pensions, inadequate though they are in many cases, on the economic position of the families concerned, is generally considered to be satisfactory. The chief probation officer in Cook County says that "for the children of mothers with right motives and willingness to accept and follow friendly and intelligent advice the system has been of great benefit." He points out that this form of assistance is not successful with mothers who, although they meet the requirements of the law, are not capable of using the money to the best advantage, or who are unwilling to accept advice on the subject.

With regard to the principle upon which mothers' pensions are based, the two chief theories held are (1) that the pensions are compensation for services rendered to the State, and (2) that they are a new form of public relief. The report of the Massachusetts State Commission says that

the terms "pensions," "indemnity," and "compensation" are irrelevant, but the term "subsidy" implies that a condition exists which, aided, will result in positive good to the State. "Subsidy makes it possible that children should stay with their worthy mothers in the most normal condition still possible when a father has been removed by death. The present system of aid is primarily for the worthy poor. What a good mother can do for her own children no other mother can do, and in her task she deserves all honourable aid." Alternative measures suggested include a scheme of social insurance, which would embrace the whole community; measures for preventing industrial accidents and reducing preventable disease; and general social improvements. About 45 per cent. of the fathers of families receiving pensions in New York City had died of tuberculosis. In Massachusetts in the year ending Nov. 30th, 1916, 31 per cent. of the fathers had died of tuberculosis, 21 per cent. of pneumonia, and 14 per cent. of the deaths were due to industrial accidents; in many cases tuberculosis appeared to have been contracted in the course of the man's employment.

International Congress and Baby Weeks.

The outstanding feature of the 1919 Baby Week celebrations, which are again planned for the first week in July, is to be a series of national conferences on infant welfare, at which the chief points for discussion will be (1) ante-natal and neo-natal casualties, their prevalence, causes, and prevention; and (2) the best non-medical means of combating infant mortality and morbidity. The National Association for the Prevention of Infant Mortality and the National Baby Week Council are co-operating in the preparations for these conferences, and arrangements are being made for the holding of similar conferences and Baby Week celebrations in every Allied and neutral country throughout the world next year, at which the same subjects will be discussed. Following on this an International Congress will take place in London, at which the findings of the various national conferences will be considered, leading, it is hoped, to much light being thrown on these important subjects.

Saving Child Life in U.S.A.

According to authorities in the United States, the death-rate of babies under one year is dependent upon a number of individual and social causes, some of which are: congenital and hereditary defects of debility; hereditary tendencies connected with syphilis, drunkenness, degradation, or degeneration of parents; inexperience and negligence of parents, voluntary or enforced by industrial conditions, including improper feeding of infants; employment of women in factories during pregnancy and soon after childbirth; poverty as a whole, with all that it implies, including improper housing, congestion of working men's quarters, especially overcrowding of their living-rooms; a too high birth-rate.

An infant mortality survey by the New York Milk Committee has been made public, which shows that the efforts of the various agencies engaged in infant welfare work, as well as the work of the New York Milk Committee, have been effective in reducing the infant death-rate in that city. The survey covers the calendar year of 1917, for which the death-rate was 88.8 per 1000 living births. In 1907 the rate was 144.

The report of the committee also contains figures from 163 of the largest cities, showing with one exception decreases in the death-rate, among the most frequent causes of babies' deaths being gastro-intestinal or diarrhoeal troubles. In New York City the infant death-rate from diarrhoeal diseases has steadily decreased from 44.4 in 1907 per 1000 children born to 19.1 in 1917. Not only have thousands of infants' lives been saved, but the health of children of all ages has been greatly improved of late. This is to a large extent ascribed to the creation in 1908 by the New York Health Department of the Bureau of Child Hygiene, the first of its kind to be established in the world, which was soon imitated by other American cities. This bureau supervises and educates the midwives; provides instruction to mothers and expectant mothers through a large number of "baby health stations"; teaches young girls their future maternal duties; takes care of the nurseries and kindergartens with their children of pre-school age; looks after the health conditions of the school children by means of the medical inspection of the schools and the help of the

nurses, who examine the children in the schools and in their homes; and, finally, ensures with increasing success that only adolescents who are physically fit are allowed to work when they attain the legal working age.

The health committee of the Mayor of New York's Committee on National Defence is making a physical examination of all children under 5 years of age in Greater New York. Dr. S. Josephine Baker is directing the work, and she has established clinics in all boroughs. More than 1000 nurses, welfare and social workers, have volunteered their services, together with 300 physicians, who are working at least two days a week free of charge. There are more than 100 clinics for this purpose in Manhattan alone, the principal borough of New York. During the week beginning July 15th some 3000 babies were examined. There is a total of over 600,000 children to be examined. And as the best time to combat and to prevent tuberculosis is in childhood, open-air classes for certain selected pupils have been provided and have been a great help in the case of children who are ill, anæmic, or predisposed to disease. The first open-air school was started at Coney Island, near New York, in 1904, and there are now 102 schools. The following types of children are admitted to these open-air classes: (1) children exposed to tuberculosis at home, or in whose family there has been a recent death from this disease; (2) children who have had tuberculosis, which is now arrested or cured; (3) children suffering from malnutrition; (4) children who become tired easily or show languor or fatigue before the end of the day, and on this account are unable to carry on their class-work; (5) children suffering from nervous disease except chorea; (6) children who are frequently absent because of colds, bronchitis, &c.; (7) children suffering from cardiac disease who are recommended by their private physician as being proper cases for these classes. This classification provides for the tubercular, pre-tubercular, and physically subnormal children who may be benefited by this open-air life. Dr. L. Marcus, the supervising inspector of the classes, says that the following results of open-air class-work have so far been observed:—Physically subnormal children improve in their mental and physical condition and their nutrition and weight improve, the gain being in most instances permanent; arrested cases of tuberculosis have no relapses; the nervous system is restored to a normal condition; cardiac cases kept under proper medical supervision improve markedly; capacity for work is increased and brought to at least a normal average; absence from school on account of illness is greatly reduced; proper diet is followed and food properly prepared; good habits are established; hygienic rules are observed; and children learn how to do the right things at the right time.

This is an outline of the vast work done in the United States to reduce infant mortality and to ameliorate the conditions of child life. New York may be said to have led the way in its excellent and efficient scheme for the starting, supervision, and general conduct of day nurseries.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Milk-supply of Dublin.

A FEW months ago the Earl of Granard, chairman of the Food Control Committee for Ireland, appointed a committee to inquire into the present milk-supply in the city of Dublin, and to report on the best methods of obtaining additional supplies from the country, and placing the supply of milk generally on a more satisfactory basis. The committee had as chairman the Lord Mayor of Dublin, and it contained two representatives of the public health committee of the city, two members of the Local Government Board, a number of persons interested in the milk trade, and certain others with special knowledge. A unanimous report has now been presented, certain reservations on minor points being noted by a few members of the committee. It was found impossible to discriminate accurately between the city and the immediate suburbs, and the report in reality deals with the conditions affecting an urban population of about 400,000. About two-thirds of the total supply comes from producers within or on the confines of the city, while

only one-third comes from country districts. Apart from the small quantity of milk of cows privately owned, the milk-supply of Dublin during the period of investigation would afford about 240 pints per head per week. The committee point out that the supply is inequitably distributed and that some of the milk arrives sour from the country. The milk vendors, in fact, were able to inform the committee that they would have required about 1000 gallons additional per day to meet the needs of their regular customers. There was, therefore, a definite shortage—most acutely felt, as might be expected, in the poorer quarters. The actual shortage the committee calculate at 2000 gallons a day. This additional supply could be obtained from the country were it not that there is also a definite shortage of railway milk churns. In regard to this matter the committee make a grave charge against the Ministry of Food. A written request for a priority certificate for the supply of 2000 churns had been forwarded to the Ministry on Nov. 16th, but up to Dec. 12th no contracts had been placed, and there was no prospect of any churns being available before the end of January, if then. The actual shortage of milk-cans seems to be due in large measure to the slovenly methods of the carrying companies, who make no charge, and take no responsibility for "empties."

The committee discussed the relative advantages and disadvantages of the system of city cowkeeping, under which two-thirds of the milk-supply of Dublin is provided. The system is, of course, closely bound up with the large brewing and distilling industries of the city, which provide cheap feeding-stuffs. Apart from this, its chief advantages are that it permits two daily deliveries of fresh milk and the dairies and cowhouses are subject to inspection by the city health officials. The quality of the milk distributed in Dublin has been a subject of much public discussion during the past few years, and in view of the seriousness of the allegations to producers as well as the public, the committee consider that the matter should be investigated by a competent authority, as they are not in a position to say whether the statements are founded on fact.

Among other suggestions, the committee recommend the temporary retention of the existing control of the export of milk cows; retaining fixed prices for the raw materials of production; the enlistment of the services of voluntary agencies so as to reduce the ultimate price of milk in the poorer-class districts by the reduction of existing charges for distribution; and, finally, the establishment of milk-drying factories at suitable centres of production.

The Strike in Belfast.

When the men at the shipyards struck and ordered out the workers at the city tramways, gas, and electric stations, in order to paralyse all parts of the city of Belfast, they showed a disregard for human suffering which it is hard for medical men to pardon. The hospitals suffered terribly by loss of power, heat, and cooking, especially from the interference with the gas, and the fate of many patients may have been adversely determined.

The Belfast Hospital for Skin Diseases.

At the annual meeting of the supporters of the Belfast Hospital for Skin Diseases, held on Jan. 24th, it was reported that in the three months following on Oct. 1st, 1918, there were admitted 270 patients, bringing the total since the hospital was established up to 51,059. Financially, there was a sum close on £250 on the credit side, which enabled the committee to invest £188 18s. 6d. in purchasing £200 War Loan stock.

A MASS meeting of the medical profession will be held at the Wigmore Hall, Wigmore-street, W., on Sunday, Feb. 2nd, at 4 P.M., under the chairmanship of Professor William Russell, formerly President of the Royal College of Physicians of Edinburgh. The following resolutions will be proposed:—

1. In view of prospective legislation and the proposed establishment of a Ministry of Health, and having regard to the experience of the medical profession at the time of the passing of the National Insurance Act, the time has arrived when a body representative of the whole profession should be established, to watch its interests and be prepared to act in an advisory capacity as occasion demands.

2. That a provisional committee be now formed with the object of securing the election of such a body.

All medical practitioners are invited. Admission on presentation of visiting card.

The War and After.

MEDICAL MOBILISATION AND DEMOBILISATION: THE WORK OF THE CENTRAL MEDICAL WAR COMMITTEE.

It is now recorded that the Central Medical War Committee owed its formal inception in 1915 to the instruction of the Annual Representative Meeting of the British Medical Association held in that year, while each successive Military Service Act as it reached the Statute Book gave the Committee an increasing orbit of activities with correspondingly increased status. The third Act, passed in April, 1918, appointed the Committee, in fact, the medical tribunal for England and Wales. As in the months that followed the demand of the Army authorities for medical men became hotter and hotter, the Committee's work became highly arduous and difficult in reconciling the demands of the military authorities with the needs of the civilian population and the rightful claims of the medical men themselves. The fastigium was reached on Nov. 11th, when, with the signing of the armistice, the statutory duties of the Central Medical War Committee as a medical tribunal came to a sudden cessation along with those of all other recruiting tribunals. The Ministry of National Service was then nominated by the Government as the department to demobilise civilian doctors included in any branch of the Services, and an Inter-Departmental Committee was appointed under the chairmanship of Sir James Galloway, including two invited representatives of the Central Medical War Committee. But the Committee's share in medical lysis has been a much greater one than this relation suggests, for with commendable prevision the problems of demobilisation had been carefully considered and a complete scheme of priority drawn up in order to ensure the return of medical officers to civilian life upon an orderly and equitable basis. This scheme, which we published in THE LANCET of Jan. 11th (p. 84), it was, in fact, which the Ministry of National Service adopted, although the final word in a particular case rests with the Minister and not with the Committee, the status of which in the matter is purely advisory and consultative. During the whole period of mobilisation and demobilisation the Central Medical War Committee has played an honourable part, and its help was specially valuable in the very acute stages before and after the cessation of hostilities.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Lieut. A. Haydon, Royal Engineers, died in London of pneumonia, youngest son of the late Dr. E. Haydon.
Capt. R. M. R. Davison, North Staffordshire Regt., attached Leicestershire Regt., died of wounds after repatriation from Germany, youngest son of Dr. R. T. Davison, of New Malden, Surrey.

FOREIGN DECORATIONS.

The King of the Belgians has conferred the Cross of Chevalier of the Order of the Crown upon the following medical men in recognition of their services to the Belgian civil population in the Yser district, notably on the occasion of an epidemic of typhoid fever in 1914-15, while working with the Friends Ambulance Unit:—

Mr. G. E. Fox; Dr. S. A. Henry; Dr. W. Smerdon; Dr. T. T. Thomson; Mr. J. R. Rees; Mr. H. C. Manning.

French.

Croix de Guerre.—Surg.-Lt. N. H. Smith, R.N.

Japanese.

Order of the Sacred Treasure, First Class.—Surg.-Vice-Adml. Sir W. H. Norman, K.C.B.

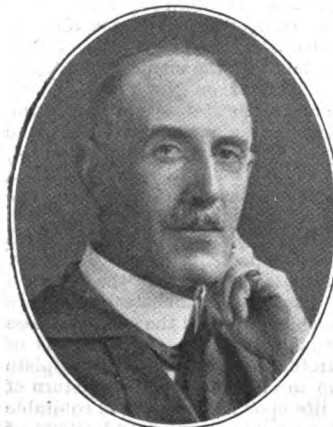
THE Royal Sanitary Institute has arranged a Conference on "Post War Developments relating to Public Health" to be held on March 13th, 14th, and 15th, at which the following subjects will be brought forward for discussion: City Hygiene in Relation to Employment; Housing for City Clerks and Similar Workers; Public Health Aspect of Tuberculosis; Public Health Work and Propaganda; Welfare Work in Factories; Child Welfare Work.

OBITUARY OF THE WAR.

HARRY GEORGE MELVILLE, M.D., F.R.C.S. EDIN., C.I.E.,

COLONEL, INDIAN MEDICAL SERVICE; PROFESSOR OF MATERIA MEDICA, LAHORE COLLEGE.

Colonel H. G. Melville, who died suddenly at Bagdad on Dec. 7th, at the age of 49 years, was second son of the late Francis Suther Melville, D.O.S. of Edinburgh. Educated at the Edinburgh Collegiate School and the University of Edinburgh, where he had a distinguished career, he acted as demonstrator in anatomy under the late Professor Sir William Turner, was the first president of the Edinburgh University Union, and one of the three presidents of his year of the Students' Representative Council. He graduated M.B., C.M. at Edinburgh in 1890, and after resident



positions at the Edinburgh Royal Infirmary, joined the Indian Medical Service in 1892 and became medical officer of the 5th Punjab Cavalry (now the 25th Cavalry) in 1896. He served in the Waziristan Expedition of 1894-95 and received a medal and clasp; in the Mohmand Campaign of 1897 and received a medal and two clasps; and in Tirah in 1897-98. In 1901 he was appointed a professor in Lahore Medical College. He held several chairs there, at the time of his death being professor

of materia medica and becoming one of the most sought physicians of Northern India. A recent principal of the College at Lahore writes of the trust and affection in which he was held by the Indian students who passed through his hands. In 1911 he was appointed by the Punjab University to represent it at the Quincentenary Celebration of St. Andrews University.

In 1916 he was appointed consulting physician to the Indian Expeditionary Force in Mesopotamia, and later to the Mesopotamian Expeditionary Force, where he worked with much success to reduce the toll of disease among the forces there. Based at Basra, he paid periodical visits to depôts on the Tigris and Euphrates. After a brief respite from his labours he returned to Basra in September, 1918, and a month or so later was appointed to Bagdad, where he died suddenly from arterio-sclerosis. He was mentioned in despatches in April, 1918, and later was awarded a C.I.E. Already master of several native languages, it was characteristic of him that after his appointment to Mesopotamia he set himself diligently to study Arabic.

Colonel Melville married in 1903 Isobel, youngest daughter of the late Alexander Lawson, of Burnturk, Fife, and leaves a widow and one daughter.

Captain **WILLIAM FRANKLIN LUTON, C.A.M.C.**, who died of pneumonia at the 2nd Southern General Hospital, Bristol, on Oct. 20th, being admitted there from the vessel on which he had been transport officer, was 29 years of age. Not having been a member of the Canadian Expeditionary Force in England, his official documents are not in the possession of the Canadian authorities in London. It is known, however, that he joined the active Militia in Canada in 1915 at Victoria, British Columbia.

WE announced in THE LANCET of Jan. 4th the death of Captain **A. J. Milne, M.B., S.A.M.C.** Mr. James W. Milne writes to inform us that he has definite information to the effect that Captain Arthur James Milne, S.A.M.C., died at Fort Johnstone, Rhodesia, on Dec. 7th. He has received South African letters, dated Dec. 8th and 15th, from the family of Captain Arthur John Milne, S.A.M.C., who is his brother, and who, he concludes, is living. We regret the error, which was also made, Mr. Milne tells us, by the South African Records Office at Pretoria.

JOSEPH VINCENT DUFFY, L.R.C.P. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. V. Duffy, who died in East Africa of influenza on Dec. 7th last, aged 27 years, was second son of Francis Duffy, of Jesmond, Newcastle-on-Tyne. Educated at St. Joseph's College, Dumfries, where he was a scholar and prizeman, and Glasgow University, he obtained in 1914 the triple diploma of the Royal Colleges of Physicians and Surgeons, Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow. After qualifying he first went into practice with Mr. A. M. G. Walker, at Hepburn-on-Tyne, surrendering this work in order to join the Royal Army Medical Corps. He had served in all the principal theatres of war—France, Gallipoli, India, and East Africa—before succumbing to the common enemy of mankind.



WILLIAM ROBERT O'KEEFFE, L. & L.M.R.C.P. & S. IREL.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. R. O'Keeffe, who died suddenly of septicæmia at Beirut, Palestine, on Nov. 21st, was son of Mr. C. H. O'Keeffe, manager of the Provincial Bank, Waterford, and of Mrs. O'Keeffe, of Ballsbridge, Dublin, grandson of Dr. W. M. O'Keeffe, of Mallow, and nephew of Major-General Sir M. W. O'Keeffe, K.C.M.G., M.D., M.Ch. Educated at Clonmel Grammar School, Kilkenny College, and University College, Cork, he qualified in 1912, and was afterwards assistant to Dr. J. S. Mather, of Bristol, and Dr. White, of Stretford-le-Hope, eventually going into practice in Sheffield. He was an all-round athlete, being a member of the first fifteen at University College, Cork, when that team won the Rugby Football Dudley Cup; he was also a fine swimmer. He leaves a widow and two children.



HENRY RUTHVEN LAWRENCE, M.D., F.R.C.S. EDIN.,

MILITARY CROSS,
CAPTAIN, SOUTH AFRICAN MEDICAL CORPS.

Captain H. R. Lawrence, who recently died in a casualty clearing station in France from pneumonia following influenza, was son of the late Dr. T. Lawrence, of George, Cape Colony. Educated at St. Andrew's College, Grahamstown, South Africa, he graduated at Edinburgh University and took his F.R.C.S. Edin. in 1912. He then proceeded to Cape Town and started practice at Newlands. He received a commission in the Union Defence Force and was called up for service within a day or two after the outbreak of war. He served in German South-West Africa until this campaign was successfully closed, and immediately volunteered for service overseas, and came to England with the first draft of the South African Expeditionary Force in September, 1915. He served for a time in England and in France with No. 1 South African General Hospital, and was then transferred to No. 1 South African Field Ambulance. Shortly afterwards he was appointed regimental medical officer to the 4th South African Infantry, and with this regiment he went through

many of the fiercest battles in 1917-18. He was awarded the Military Cross for bravery in action during the last month of hostilities.

Captain Lawrence was widely known in South Africa, both as a skilful and successful practitioner and as an athlete. He was a sportsman and yachtsman, and rowed for his University as a student.

Captain C. R. LISTER, M.C., A.A.M.C., who died from influenza on Nov. 21st, was educated at Hawthorn College, Melbourne, where he was a member of the cricket and football teams, and proceeded to the Melbourne University in 1909. During his first year he attended Trinity College, though not in residence there, and graduated with honours in March, 1914. He obtained his "University Blue" by becoming a member of the University tennis team during his third year, and was a member of the Victorian team in the inter-State matches of 1912. After graduation in 1914 he was resident medical officer at the Melbourne Hospital from March, 1914, to 1915, and was out-patient surgeon at the Melbourne Hospital from 1915 until 1918. He was also appointed demonstrator in anatomy at the Melbourne University in 1915, and was subsequently appointed Stewart lecturer in anatomy, holding this appointment for three years, up to the time of his embarkation for active service in 1918. In 1915 he was appointed resident tutor in surgery at Trinity College, and at the end of that year volunteered for active service, but owing to the difficulty at that time of securing a suitable successor as demonstrator in the anatomy school the University authorities were unable to release him. During the long vacation of 1915-16 he served as a medical officer on a troopship between Australia and Egypt. In 1917 he obtained the degree of Master of Surgery of the University of Melbourne. At the end of that year when the University authorities were able to release him, he enlisted in December, and arrived in England in July, 1918. After two months' duty in England he proceeded overseas to France, and died at No. 14 General Hospital at Wimereux from influenza on Nov. 21st. He married Miss Meryl Waxman, the daughter of C. R. Waxman, of Melbourne, who is well known in tennis circles, and leaves his widow with one child.

MENTIONED IN DESPATCHES.

In a despatch received from the Commander-in-Chief, British Salonika Force, dated Dec. 1st, 1918, the following reference to the Medical Services is included:—

In this unhealthy climate the efficient administration of the Medical Services is naturally of extreme importance, and in this respect a very high standard of efficiency has been attained. In an army saturated with malaria, and passing through a severe outbreak of influenza, heavy calls were constantly made on the strength and devotion to duty of the Royal Army Medical Corps, of whose work I cannot speak too highly. I am much indebted to Major-General M. P. Holt, K.C.M.G., O.B.E., D.S.O., and his subordinates for the admirable manner in which their duties have been performed.

The names of the following medical officers have been received from the Commander-in-Chief of the Egyptian Expeditionary Force as worthy of mention for their services during the period from March 16th to Sept. 18th, 1918:—

Staff.—Temp. Maj. (acting Lt.-Col.) J. J. Abraham, D.S.O., R.A.M.C.; Temp. Capt. (acting Lt.-Col.) W. Angus, R.A.M.C.; Capt. J. Chalmers, R.A.M.C. (T.F.); Col. E. J. & Evatt, D.S.O., R.A.M.C. (T.F.); Lt.-Col. (acting Col.) C. Garner, C.B.E.; Capt. and Bt. Maj. (temp. Maj.) A. S. M. MacGregor, R.A.M.C. (T.F.); Capt. (temp. Maj.) P. A. Ople, R.A.M.C.; Lt.-Col. (temp. Col.) B. P. Sewell, O.M.G., D.S.O., R.A.M.C. *Army Medical Service and Royal Army Medical Corps.*—Temp. Capt. R. H. Astbury; Temp. Capt. C. H. Burgess; Lieut. (temp. Capt.) W. M. Cameron; Temp. Maj. J. P. Campbell; Temp. Capt. H. Cardin; Temp. Capt. J. Chabré; Temp. Col. C. C. Choyce, C.B.E.; Temp. Capt. F. H. Diggie, O.B.E.; Maj. (acting Lt.-Col.) W. F. Ellis, O.B.E.; Temp. Capt. W. W. Forbes, O.B.E.; Temp. Capt. N. S. Gilchrist, O.B.E.; Temp. Lieut. E. Giffon; Temp. Capt. E. G. Goldie; Temp. Capt. W. F. Hawkins; Capt. T. F. Kennedy, O.B.E.; Maj. (acting Lt.-Col.) W. E. O. Lunn, M.C.; Capt. (acting Maj.) W. Mathieson; Capt. J. T. Simson; Temp. Capt. O. W. Smith, O.B.E.; Temp. Capt. (acting Maj.) E. B. Smith; Temp. Capt. (acting Maj.) W. H. D. Smith; Capt. B. H. H. Spence; Lt.-Col. G. E. F. Stammers, O.B.E.; Temp. Capt. J. A. H. Telfer.

Royal Army Medical Corps (S.R.).—Capt. H. W. Evans, M.C.; Capt. D. Fraser, M.M.; Capt. (temp. Lt.-Col.) P. S. Vickerman, O.B.E.; Capt. O. Williams.

Royal Army Medical Corps (T.F.).—Maj. L. A. Avery, D.S.O.; Capt. R. Brercliffe, O.B.E.; Capt. C. Douglas; Maj. W. Dyson, O.B.E.; Maj. (acting Lt.-Col.) J. Evans, D.S.O.; Maj. F. Gracie, O.B.M.; Capt. J. Ingalls, O.B.E.; Lt. H. Jessop; Capt. G. J. Linklater; Capt. (temp. Maj.) W. C. Macaulay; Maj. (acting Lt.-Col.) J. W. Mackenzie, O.B.E.; Capt. J. M. Mitchell, M.C.; Capt. (acting Maj.) L. M. V. Mitchell, O.B.E.; Capt. (temp. Maj.) R. Phillips; Capt. (acting Maj.) G. F. Pritchard; Maj. G. C. Taylor, O.B.E.; Maj. A. Thomas; Maj. F. B. Treves, O.B.E.; Capt. (acting Maj.) A. F. Watson, O.B.E.

Indian Medical Service.—Lt.-Col. (temp. Col.) W. H. Ogilvie, C.M.G.; Capt. (temp. Lt.-Col.) A. G. Coulie; Capt. D. L. Graham, O.B.E.; Maj. (temp. Lt.-Col.) E. O. Hodgson, D.S.O.; Lt.-Col. P. S. Lelan, C.B.; temp. Lt. K. R. Ma'an, O.B.M.

Indian Subordinate Medical Department.—Asst. Surg., 4th Class, F. M. Graham; Asst. Surg., 2nd Class, R. H. Hughes; Asst. Surg., 3rd Class, J. A. Pinto.

Australian Army Medical Corps.—Capt. A. M. Aspinall; Lt.-Col., C. B. Blackburn, O.B.E.; Lt.-Col. (temp. Col.) G. P. Dixon, C.B.M.; Col. R. M. Downes, O.M.G.; Maj. N. H. Fairley, O.B.E.; Lt.-Col. (temp. Col.) R. Fowler, O.B.E.; Capt. W. H. Kilner; Lt.-Col. W. L. Kirkwood; Capt. A. T. Robertson; Capt. E. J. Silvertown; Lt.-Col. J. C. Storey, O.B.E.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. Lieuts. J. H. B. Hogg and E. W. Payne, who have been invalided on account of ill-health contracted in the service, to retain their rank.

ARMY MEDICAL SERVICE.

Temp. Major-Gen. Outhbert S. Wallace relinquishes his commission and retains the rank of Major-General.

Temp. Col. H. A. Bruce (Colonel, Canadian Army Medical Corps) relinquishes his temporary commission and retains the rank of Colonel.

ROYAL ARMY MEDICAL CORPS.

Major (temp. Lieut.-Col.) Hewinald V. Cowey relinquishes the temporary rank of Lieutenant-Colonel on re-posting.

Majors to be acting Lieutenant-Colonels: Whilst in command of a Medical Unit: T. S. Blackwell, G. R. Panton, T. H. Gibbon, W. J. Watson. Whilst employed as Assistant Directors of Medical Services of a Division: J. H. Brunskill, W. B. Sparkes.

Captains relinquishing the acting rank of Lieutenant-Colonel and reverting to the acting rank of Major, with pay and allowances of their substantive rank: S. J. Higgins, J. F. Grant.

Temporary Captains relinquishing the acting rank of Major on re-posting: W. G. Waugh, C. F. White, Alan R. Green, J. D. Duncan, C. G. H. Morse, A. H. M. Robertson, J. Lamont.

To be acting Majors: Capt. R. D. Davy, J. P. Little, E. P. A. Smith, F. A. Robinson; Temp. Capt. W. C. Horton, G. L. Keynes, G. D. McLean, J. C. Sale, W. Morris, V. L. Connolly, D. E. Russell, G. H. Davy, W. P. Cooney, C. G. Mackay, J. A. G. Burton, A. R. Elliott, S. S. Dunn (while in command of troops on a Hospital Ship). Whilst specially employed: Temp. Capt. M. McLeod, C. U. Lord; Capt. D. B. McGrigor.

Temp. Major S. H. McCoy, C.A.M.C., to be temporary Lieutenant-Colonel.

Capt. J. J. H. Beckton to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Temp. Major E. O. Hort relinquishes his temporary commission and is granted the temporary honorary rank of Lieutenant-Colonel whilst specially employed with the Red Cross Society.

Temporary Captains to be acting Majors: G. B. Elliott. Whilst specially employed: A. G. Caldwell, T. E. R. Branch.

Temp. Capt. P. D. Saylor, C.A.M.C., to be acting Major while employed as Director of Sales.

Temp. Capt. H. Gibson to be acting Major while in charge of Glenlondond War Hospital.

Temp. Capt. H. A. Sneltinger, C.A.M.C., to be temporary Major.

Temporary Lieutenants to be temporary Captains: J. H. P. Vivian, J. M. McCormack, E. F. Lawson, J. J. Delaney, O. H. Woodcock, J. Good, H. S. Roberts, A. E. Ede, A. G. Wright.

Temporary Honorary Lieutenants to be temporary Honorary Captains: H. W. Woodward, A. Gregg, D. C. Parmenter (from No. 22 General Hospital, Harvard Unit), W. S. Rutherford.

C. M. Halsall to be temporary Lieutenant.

Officers relinquishing their commissions:—Temp. Majors retaining the rank of Major: R. T. Herron, J. C. MacNeillie, H. Hemsted (Major, S.A. Med. Corps), C. C. Heywood, H. Doddson. Temp. Capt. (acting Majors) C. A. Boyd, J. Lamont, T. I. Bennett, and retain the rank of Major. Temp. Major W. H. Mackenzie. Temp. Capt. R. Briffault, D. P. Williams, H. B. Minshall, W. E. R. Diamond, F. Gravely, J. Boyd. And retain the rank of Captain: A. B. Le Mesurier, A. R. Hall, J. P. O'Connor, G. B. Brown, D. M. Barry, C. H. Brookes, C. A. Moseley, J. Bain, J. C. Macaulay, W. H. Johnston, J. P. O'Flynn, A. Malseed, G. Lawrence, G. Thom, L. H. Bryson, H. W. Windsor-Aubrey, J. P. Fehly, W. Daunt, T. A. Adams, S. J. Simpson, V. B. Kyle, M. Henry, V. B. Ridewood, J. T. O'Boyle, W. Macdonald, D. L. Tate, H. M. Reeve, E. G. Gillies, A. F. Wilson-Gunn, R. C. Cummins, E. C. Abraham, A. S. Dawson, C. F. Knight (acting Major), R. D. Lemon, J. L. Rentoul, J. A. Black, W. Parker, L. S. O'Grady, F. Garrett, R. C. Lowe, J. McA. Hill, S. Rowland, C. S. Vartan, H. T. Lippatt, W. B. Rutherford. Temp. Lieuts. P. N. Twomey, G. E. Oates, N. S. Williams, A. A. Angelis, and retain the rank of Lieutenant. Temp. Capt. (acting Major) Maurice N. Perrin relinquishes his commission on transfer to the R.A.F.

TERRITORIAL FORCE.

Major F. Gracie and Capt. H. F. Humphreys to be acting Lieutenant-Colonels whilst specially employed.

Captains to be acting Majors whilst specially employed: W. H. Milligan, C. M. Gozney, J. M. Pringle, O. M. Nicol, F. Arvor, W. N. P. Williams, J. H. Donnell, L. N. Reece.

Capt. (acting Majors) L. M. V. Mitchell, G. B. J. A. Robinson, W. C. Hodges, H. F. W. Boedicker, F. Wigglesworth, C. M. H. Milner, A. Mowat, and H. W. Wier relinquish their acting rank on ceasing to be specially employed.

Capt. E. W. Richards relinquishes his commission on account of ill-health and retains the rank of Captain.

Capt. H. G. Mallam relinquishes his commission on account of ill-health contracted on active service and retains the rank of Captain.

Major (acting Lieut.-Col.) F. G. Williamson relinquishes his acting rank on ceasing to be specially employed.

Capt. A. W. Nuthall to be Major.

2nd London General Hospital: Capt. (Brevet Major, acting Lieut.-Col.) R. H. Fenwick relinquishes his acting rank on ceasing to be specially employed, and is restored to the establishment.

3rd Northern General Hospital: Capt. (acting Major) J. H. Cobb relinquishes his acting rank on ceasing to be specially employed, and is restored to the establishment.

2nd Northern General Hospital: Capt. A. Richardson is restored to the establishment.

1st Western General Hospital: Capt. R. W. MacKenna is restored to the establishment.

2nd Western General Hospital: Capt. H. Buck and E. Molr are restored to the establishment.

5th Northern General Hospital: Capt. W. I. Cumberlidge is restored to the establishment.

1st London Sanitary Company: Lieut. F. N. McRae to be Captain.

2nd London Sanitary Company: Capt. N. Gebbie to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed. Lieut. H. Jessop to be Captain.

The undermentioned Lieutenants to be Captains and to remain seconded: T. H. Savory, G. N. F. Reddan, J. Dall, A. Sykes, D. Smith.

TERRITORIAL FORCE RESERVE.

Lieut.-Col. E. J. Cross, from Eastern Mounted Brigade Field Ambulance, to be Lieutenant-Colonel.

Lieut.-Col. A. Ogston, from the High Casualty Clearing Station, to be Lieutenant-Colonel.

Major E. B. Waggett, from 3rd London Field Ambulance, to be Major.

Majors P. G. Williamson and R. Stirling, from Attached to Units other than Medical Units, to be Majors.

Major J. McD. Nicoll, from 2nd Northern Field Ambulance, to be Major.

Major J. E. Molson, from Attached to Units other than Medical Units, to be Major.

Capt. J. M. O'Meara, from Eastern Mounted Brigade Field Ambulance, to be Captain.

Capt. H. J. Shanley, from 2nd Northern Field Ambulance, to be Captain.

Capt. C. Corfield, from the 3rd South Midland Field Ambulance, to be Captain.

Capt. (acting Major) D. Lamb, from 4th Scottish General Hospital, to be Captain.

To be Captains: Capt. W. M. Wilson, from 2nd Northern Field Ambulance; T. P. Caverhill (acting Major), D. R. Harris, H. L. Munro, W. J. Lacey-Hickey, J. W. M. Jamieson, from Attached to Units other than Medical Units; W. C. Hodges, from 1st South Western Mounted Bde. Field Ambulance; H. F. W. Boedicker, from 1st South Midland Field Ambulance; A. E. Barnes (acting Major), from 3rd Northern General Hospital; W. D. Carruthers, from 1st London Sanitary Co.; A. Greene from Wessex Casualty Clearing Station; F. Wigglesworth, from 1st West Riding Field Ambulance.

S. Robertson relinquishes his commission on ceasing to be employed, and is granted the rank of Captain.

Lieut. H. B. Pearson relinquishes his commission on ceasing to be employed, and retains the rank of Lieutenant.

ROYAL AIR FORCE.

Medical Branch.—Lieut.-Cols. to be Lieut.-Cols. (Grade A): E. O. B. Carbery, H. Cooper, E. O. Oridland, H. J. Hadden, N. H. Harris, R. H. Mornement, J. St. J. Murphy, T. Philip, W. H. Pope, N. J. Roche, H. B. South, H. V. Wells.

Majors (acting Lieut.-Cols.) retaining the acting rank of Lieut.-Col. whilst employed as Lieut.-Cols. (Grade A): G. N. Biggs, H. C. T. Lungden, T. F. Muecke.

L. B. Stringer (temp. Surg. Lieut., R.N.) is granted a temporary commission as Captain.

VITAL STATISTICS OF ENGLAND AND WALES FOR 1918.

THE following statement shows the birth- and death-rates and the rates of infant mortality in England and Wales, and in certain parts of the country, during the year 1918, the figures being provisional:—

| | Birth-rate per 1000 total popula- tion. | Civilian death-rate per 1000 civilian population (crude rate). | Deaths under 1 year per 1000 births. |
|--|---|---|--|
| England and Wales* | 17.7 | ? | 97 |
| 96 great towns, including London (populations exceeding 50,000 at the Census of 1911) | 17.6 | 18.1 | 106 |
| 148 smaller towns (populations from 20,000 to 50,000 at the Census of 1911) | 18.0 | 16.1 | 94 |
| London | 15.8 | 18.7 | 107 |

* The civilian death-rate for England and Wales cannot be stated at present, the number of non-civilian deaths in the fourth quarter of 1918 not being available.

Major Sir Samuel Scott, Bart., M.P. for St. Marylebone, London, is to introduce the Nurse's Registration Bill drafted by the Central Committee for the State Registration of Nurses.

Correspondence.

"Audi alteram partem."

"TRIVIAL" CASES AT VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—May I traverse one statement that has appeared regarding the future of voluntary hospitals? It is that these hospitals should be relieved from "trivial" cases. I think that there are but few "trivial" cases. Any real departure from health is to be regarded as serious. Early diagnosis and, following that, early treatment are wanted. The beginnings of disease are difficult to diagnose. The recurrent catarrh may be phthisis; the "piles" which the chemist treats, may be rectal cancer; indigestion may be early stomach cancer or what not?; sciatica may mean hip disease. How insidiously many grave nervous diseases begin! Some affections of vision indicating serious disease have slight beginnings; neglected pyorrhoea may lead to many things; either headache or cough may be the beginning of a serious malady; constipation has multitudinous possibilities.

What of the recurrent disabling trivialities with their concomitant periods of economic uselessness, such as nasal catarrh, lumbago, "neuralgia," dysmenorrhoea, "rheumatism," some skin diseases, mal-nutrition? The potentialities of gonorrhoea or of "running ears" are enormous. Then what of the medical student? Is he no longer to see "trivial" cases at his medical school?

I have taken examples of disease just as they occur to me, but they might be multiplied indefinitely. In all of them anyone can recognise the necessity for elaborate and careful diagnosis and treatment. If the voluntary hospital—or whatever the health institution of the future be called—eliminates "trivial" cases from its activities, assuredly there will result grave medical disadvantage to the public.

I am, Sir, yours faithfully,

A. W. SHEEN,

Colonel, A.M.S. (T.F.), Consulting Surgeon,
War Hospitals.
India, Dec. 3rd, 1918.

THE HYPOTHERMIC, OR DEPRESSION, STAGE OF INFLUENZA.

To the Editor of THE LANCET.

SIR,—The depression which follows influenza is so constant that it ought to be regarded as part of the disease. During this period of depression the temperature is subnormal. This stage of subnormal temperature is not generally recognised, but it is of great importance, for it is during this period that the risks of complications are so great, and convalescence is not established until the temperature has reached its normal level again. The condition deserves a name, and I propose to call it hypothermia, and to speak of the stage as the stage of hypothermia, or the hypothermic stage. There is a hypothermic stage after every fever, to which it bears a general relation, being short where the initial fever has been short, and prolonged where, as in typhoid fever, it has been prolonged.

In no fever is the hypothermic stage more pronounced and prolonged than in influenza, and that often in cases where the initial attack has been slight, or where, as in the so-called afebrile cases, the temperature is not known to have been raised at all. During the prevalence of influenza cases are not at all uncommon in which the patients feel cold and miserable and cannot get warm even before a blazing fire or in bed, and the temperature is all the while subnormal. These are, I believe, instances of hypothermia following an unrecognised attack of influenza, for they are not often met with except when influenza is prevalent.

I drew attention to this condition in my account of the epidemic of 1890 and have referred to it frequently since, yet it has not gained general recognition and in the recent clinical descriptions of influenza it is not even referred to. Perhaps if it receives a name it will get the attention it deserves. Anyway, the recognition of this stage is of practical importance, for it is at this period that complications are so likely to occur which might have been avoided. The difficulties often lie with the patients, for as soon as the fever has gone they are so apt to think themselves well and to disregard the doctor's warnings. If they are made to

understand that the hypothermic stage is part of the attack and that they cannot be considered convalescent until the temperature has ceased to be subnormal, and it has risen again to the normal level, the appeal to the thermometer may make them more amenable.

I am, Sir, yours faithfully,
Wimpole-street, W., Jan. 23rd, 1919. SAMUEL WEST.

ACCURATE DIAGNOSIS IN APPENDICITIS.

To the Editor of THE LANCET.

SIR,—I venture to think that in the various papers written upon the subject of appendicitis hardly sufficient attention—in fact no attention—has been given to certain experiments conducted by Dr. Alexander Paine and myself, published in THE LANCET of August 17th, 1912, and elaborated in our volume on "Researches on Rheumatism." These experiments were of some historic interest, for they demonstrated for the first time that it was possible to isolate from human appendicitis a micro-organism which on intravenous inoculation reproduced the disease in rabbits. The specimens were presented to the Museum of the Royal College of Surgeons of England.

Their importance lies in the demonstration that the infection is a blood infection *not* attacking from the lumen of the appendix, but from the *peritoneal surface* by the blood stream. Every step in the process was demonstrated and the pathology is fully illustrated in our book. As a result of the infection "ballooning" of the appendix may occur without any concretion, and whether or not the "balloon" bursts clearly depends on the extent of necrosis of the wall infected. The result of the inflammation is catarrh in the tube, which, when the process is chronic, causes the formation of a faecal stone, and this in turn adds the factor of traumatism. The strictures are the result of local chronic inflammation from the blood infection and a "mitral stenosis" of the lumen of the duct, if I may coin a term to save space. The stricture complicates the history of appendicular disease, as all are aware. The technical difficulties of the bacteriological investigations are described, and a method for overcoming them detailed, in our book.

I believe it to be of importance that it should be realised that appendicitis is in origin a blood infection and not a local infection, for the difficulties of early detection and obscurities in the history are made much more obvious when the pathology is turned outside-in and not inside-out, as is so often the case.

I am, Sir, yours faithfully,
Devonshire-place, W., Jan. 26th, 1919. F. JOHN POYNTON.

ACUTE APPENDICITIS AND ACUTE APPENDICULAR OBSTRUCTION.

To the Editor of THE LANCET.

SIR,—The paper on this subject by Mr. S. T. Irwin in your issue of Jan. 18th is of great interest to me, bringing forward as it does the most valuable corroborative evidence of the thesis which I put forward at the meeting of the British Medical Association in July, 1914—namely, that there are two acute diseases of the appendix—acute inflammation and acute obstruction. I maintained that the one disease differed from the other not only in its symptoms and pathology, but also in its danger to life and in the urgency of the treatment required.

In my original paper¹ I brought forward clinical and experimental evidence which appeared to me to be conclusive in this connection. Later experience has confirmed me in my views, and I have now no hesitation in saying that our teaching of the symptomatology and pathology of acute appendicular disease should be based on those clear and distinctive lines. Unless this is done the description of the symptoms of so-called appendicitis must be qualified in so many points that it ceases to be distinctive. With two well-defined clinical pictures based on sound pathology the student and practitioner are in a position to detect the different forms of acute appendicular disease in their early stages, and by recognising the great urgency for immediate operation in the cases of obstruction to reduce to a minimum the needless loss of life which still obtains in this disease.

I am, Sir, yours faithfully,
Edinburgh, Jan. 20th, 1919. D. P. D. WILKIE.

A PERSONAL RETROSPECT OF GENERAL PRACTICE.

To the Editor of THE LANCET.

SIR,—I have read with interest, sympathy, and the appreciation of experience, the thoughtful paper by Dr. James Pearse, which appears under the above title in THE LANCET of Jan. 25th. Its excellence justifies the prominence you have given it. The advocacy of the interests of the general practitioner by THE LANCET, from its inception under its Founder—Thomas Wakley the first—until the present day, gives you an authoritative position in discussing his status and prospects.

Times change and we with them are altered, and one would like to think that the position of the general practitioner in the present day and his prospects had altered for the better. He would, however, be a bold man who would maintain this thesis. My own retrospect of practice, first as a general practitioner and later as a consultant, now reaches rather more than 40 years, a period nearly equally distributed in the two spheres of work. I may therefore claim to be in a position to appreciate Dr. Pearse's account of the difficulties and the advantages and disadvantages of the environment of the general practitioner and his relation to other branches of the profession. Time was when, in England especially, a considerable gulf yawned between the practitioner and the consultant, and the infringement of the commercial interests of either was resented by both. Even now there is an echo of this in the occasionally insistent angry query, "What is a consultant?" In the humblest days of the visiting apothecary the action of the College of Physicians of London in supplying good drugs to the poor was resented by the former, aided by interested friends among the physicians, as related in Garth's Dispensary, at a time when medicine languished and men "studied lucre more and science less."

It was the calculated design, on the other hand, of the consultant to keep the chasm wide between the two classes, when THE LANCET was founded, which brought its doughty first editor and proprietor into the field as a medical informer and reformer, and Thomas Wakley's work should never be forgotten by that section of the body which he left with at least some title to be considered a liberal profession rather than a debased trade. Whether the action of more recent medical politicians is likely to have an equally beneficial effect may be gravely doubted. Wakley's efforts were towards a unification of the profession. Present-day tendencies appear to be towards its undue division. He, by his educative work, promoted evolution from the general to the particular; now, by a hopeless gaze upon the increase of knowledge and an unwise specialism, we are in danger of fatally dissolving an organic whole into its component parts. As Dr. Pearse points out, this danger is less in country districts than in larger centres of population, where the general practitioner, robbed of responsibility, has too easy opportunity of delegating work, and tends to become a mere "sifter" of cases, to use Dr. Pearse's term.

Research and practice cannot be divorced in any sphere of cultivated medicine without detriment to the quality and utility of both. Research cannot be fruitfully pursued without touch with practice. Positions of more particular research may arise in general investigation, but there is a danger in the creation of special research posts to be filled by men without active touch with general experience. Even the shortness of life and the length of art do not justify the creation of such.

With all that Dr. Pearse says of the influence of individual temperament and the education of the man preparing for practice one must be in full agreement. The value of the inspiring teacher cannot be overestimated. It needs, however, an inspired teacher to inspire others, and, unfortunately, he cannot be produced even under the fostering influence of that twentieth-century recipe for genius, a large salary! The student, once inspired, remains a student all his life, and the uninspired student had very much better adopt some other calling than medicine, which is a rough road not often leading to a gold mine. Duly educated, however, and once in the profession, the secret of progress for the general practitioner, promotive alike of his own growth and benefit and of the public good, is contained in a single word—*collaboration*.

¹ Brit. Med. Journ., Dec. 5th, 1914.

The writer can recall a group of men who, in a then comparatively detached part of this metropolis, by collaboration in research in general practice (they were also the first so-called "team workers" among practitioners) produced, in its own degree, work comparable with any other work in interest and utility, and begot a camaraderie and punctilio in ethics which rendered it a joy to be a general practitioner, notwithstanding days and nights laborious in more senses than one. Many of those collaborators have passed away, including one—the Atlas who bore that little world—and all largely unsung, some poor, but none, as Dr. Pearse says, unhonoured or unwept. That under any State system, in being or contemplated, the same spirit will be evoked to the benefit of the individual, the profession, and the community is more than doubtful. The intrusion of the State into medicine tends, and in the opinion of many will ever tend, to destroy the individuality and independence of the practitioner, and, what may appeal to the State more, to impair also regard for the patient as an individual and his freedom as a citizen, and, with this, sufficient medical interest in him.

Jan. 27th, 1919.

I am, Sir, yours faithfully,
F.R.C.P.

VENEREAL DISEASES IN EGYPT.

To the Editor of THE LANCET.

SIR,—In the report of my lecture on the above subject which you were good enough to print in your issue of Jan. 25th, it is implied that during the first five months of 1916 10,000 Australian troops were infected.

Will you permit me to correct the statement? The total known infections of all troops in Egypt were 10,000. I did not attempt to discriminate between the various subdivisions of the army.—I am, Sir, yours faithfully,

Jan. 27th, 1919.

JAMES W. BARRETT.

WAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—Dr. P. McBride, commenting in your issue of Jan. 25th on the contribution of Dr. C. S. Myers to the study of shell shock (THE LANCET, Jan. 11th), gives it as his opinion that functional deafness is extremely rare and that the statement—

"Every physician of experience must have met with patients suffering from functional deafness whose sleep has not been in the least disturbed by the loudest noises"—

would have to be answered by him with a decided negative.

I have had two cases of absolute functional deafness as the only symptom following shell explosion, and in both sleep was not in the least disturbed by noise.

One case is of special interest in that the patient was tested from this point of view by Mr. Arthur Cheate, who failed to wake the sleeper with the loudest noises right over his ear. The duration of the symptom in this case was three months and I could not satisfy myself that he even gave a flicker with the dropped-bucket test. Mr. Cheate gave it as his opinion that the case was functional, and normal hearing was restored after five days' treatment by suggestion.

An additional interest is attached to this case in that though at first he showed genuine delight at the recovery of his hearing he later developed anxiety neurosis. It shows the disposition to equivalent symptoms in hysteria and also that suggestion, though a valuable therapeutic agent for the removal of symptoms, is insufficient as a method of cure.

I am, Sir, yours faithfully,

E. PRIDEAUX,

Temporary Captain, R.A.M.C.

Ewell War Hospital, Jan. 26th, 1919.

CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—I regret that Mr. Denison Pedley should have found my letter confusing. How far the fault here rests with him or with me I leave others to decide. Mr. Pedley seems much concerned to prove that I have exaggerated the amount of dental disease in this country. I am content to know that so high an authority as Dr. Sim Wallace does not share his opinion. Mr. Pedley's outlook and my own regarding the practical handling of the dental question are entirely

different. He pins his faith largely on the establishment of "school dental treatment centres for the children of the elementary schools." This is mere patchwork. Our primary aim should be prevention. It has been shown conclusively that dental disease in children can be reduced almost to the vanishing point by the adoption of quite simple precautions, and it is the plain duty of our profession to bring this pregnant truth home to the people of this country and to do its best to remove a national disgrace.

I understand from a highly educated native doctor that it is a general custom with the Hindus to rinse the mouth out after every meal from the time of weaning onwards. Even a beggar will ask for water for this purpose. The care of the teeth is with them almost a religion, and not to have good teeth a disgrace which is felt keenly.

I am, Sir, yours faithfully,

Cavendish-square, W., Jan. 28th, 1919. HARRY CAMPBELL.

MEDICAL PRACTITIONERS AND THE DETECTION OF CRIME.

To the Editor of THE LANCET.

SIR,—The National Council for Combating Venereal Diseases are anxious in the public interest to secure the enforcement of the Venereal Diseases Act, 1917.

With reference to the note under this title in your issue of Jan. 18th we wish to draw your attention to the fact that Dr. Otto May undertook, on behalf of the Council, to assist in obtaining the conviction of a quack in active practice.

Though in many ways repugnant to him, he considered the interest of the community and of the individual sufferers as paramount, and therefore sacrificed his personal feelings and undertook this disagreeable duty.

Dr. May was acting throughout as a representative member of the public and not in his capacity as a medical man. Therefore the analogy drawn in the article between his action and that of a medical man dealing with a case of abortion is not a true parallel.

I am, Sir, yours faithfully,

S. GOTTO,

General Secretary, National Council for Combating Venereal Diseases.

Jan. 28th, 1919.

* * We are certain that Dr. May sacrificed his personal feelings to undertake a disagreeable public duty, and we respect him for it. We said expressly that we did not question that he was actuated by a sense of public duty. But a medical man could obviously be actuated by the same sense in dealing similarly with a case of abortion. The analogy which we drew was a true one.—ED. L.

PLACE AUX EMBUSQUÉS?

To the Editor of THE LANCET.

SIR,—In your issue of Jan. 25th Mr. A. W. Comber does well to draw, under this title, the attention of the medical world in general to the action of the Birmingham Health Committee with regard to the Birmingham Pensioners' Hospital. This and other happenings—for example, the scheme for priority of demobilisation, which gives the same number of points to the man who has never been out of his own home and to the man who has been on active service all the time—are serious portents of what is going to occur in the near future.

It was surely too obvious that an R.A.M.C. officer who had been on active service, and who accordingly must know our soldier and his ailments at first hand, would be better qualified to look after him than a doctor who has not had active service experience. That, quite apart from the invitation of the advertisement—"senior officer preferred." Presumably the gentleman who has been appointed will (under the Central Medical War Committee's scheme) shortly be called up to replace in the Army one of the unsuccessful applicants for the post. May I bring this point of view to the notice of the Central Medical War Committee?

I am, Sir, yours faithfully,

Jan. 28th, 1919.

"RESERVE."

CENTENARIANS.—Mr. Edward P. Smart, of Sparkford, Somerset, celebrated the 100th anniversary of his birthday on Dec. 23rd, 1918.—Mrs. Arthur Mozley, of Malvern View, Cheltenham, celebrated the 104th anniversary of her birthday on Jan. 22nd.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following are the results of the Triple Qualification Examinations:—

THIRD EXAMINATION.

Douglas Chiene Scotland, James Foster Cook, Lachman Singh Ahluwalia, Arthur Henry Jacobs, Ronald MacKinnon, and Bernard McLaughlin.

Pathology.—Sayed Chaleb and Stanley Sewell Nicholson.

Materia Medica.—Perceval Charles Holden Homer.

FINAL EXAMINATION.

Lazarus Samuels, William Francis Gawne, Lachman Singh Ahluwalia, Arthur Kinsey Towers, Victor Albert Rankin, John Vaughan Griffith, George Alexander Grandsault, Quintin Stewart, William Brownlee Watson, Ben Cheifitz, and Richard Irving Fuggle.

Medicine.—Daniel Adrian Stegman, Thomas Ferguson Minford, James Miller Speirs, Reginald Leslie Wright, and John Archibald Steel Campbell.

Surgery.—William Gibb, and John Archibald Steel Campbell.

Midwifery.—Hassan Amin Madiwar, Thomas Ferguson Minford, Gilbert Llewellyn Stanley, James Miller Speirs, Reginald Leslie Wright, and Sidney Hill Waddy.

Medical Jurisprudence.—Daniel Adrian Stegman, Walter Carew, Veeravagu Katheravel Paramanayagam, Donald Mackay, Gordon Beveridge, and Leo Hugo Peries.

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Jan. 23rd, with Sir Francis H. Champneys in the chair. Two midwives were struck off the Roll, the following charges, amongst others, having been brought forward:—

Neglecting to wash the patient's external parts with soap and water and to swab them with an efficient antiseptic solution after the termination of the labour and during the lying-in period, as required by Rule E. 8; neglecting to remove the soiled and stained linen from the neighbourhood of the patient as soon as possible after the labour and before leaving the house, as required by Rule E. 11; neglecting to give all necessary directions for securing the comfort and proper dieting of the mother and child during the lying-in period, as required by Rule E. 12; not being scrupulously clean in every way, as required by Rule E. 2; not taking and recording the pulse and temperature of patients at each visit, as required by Rule E. 14; not entering records of pulse and temperature in a notebook or on a chart carefully preserved, as required by Rule E. 14, and not keeping a register of cases as required by Rule E. 24. A child suffering from inflammation of or discharge from the eyes, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as provided by Rule E. 21 (5), and when called to a confinement she did not take with her the appliances and antiseptics required by Rule E. 3.

A meeting was held on Jan. 23rd, when a letter was considered from the Local Government Board asking the Central Midwives Board to reconsider the form of the draft rules approved at the Board meeting of Dec. 19th, 1918, requiring a midwife to notify the Local Supervising Authority when she has advised artificial feeding. The Board decided that Draft Rule E. 12A be amended to read as follows:—

"A midwife must forthwith notify the Local Supervising Authority of each case in which it is proposed to substitute artificial feeding for breast feeding."

—The Board, having considered the appointment, for a limited period, of an assistant secretary to the Board, decided (a) that it is desirable to appoint an assistant secretary with a view to his appointment as secretary, should the Board so determine, on the retirement of the present secretary on Sept. 6th next; and (b) that the chairman, Miss Paget, and Dr. West be appointed a sub-committee to consider applications and to bring before the Board the names of three candidates for appointment of one of them by the Board.—The secretary reported that copies of the draft rules regulating the payment of expenses incurred by members in respect of their attendance at meetings of the Board had, on Dec. 20th, 1918, been forwarded to the Scottish and Irish Midwives Boards for their information, and that no comment thereon had been received from either Board. The Board decided that the secretary be directed to forward to the Privy Council copies of the draft rules framed by the Board under Section 4 of the Midwives Act, 1918, and to request the Privy Council to approve them.—The secretary reported that copies of the draft rules deciding the conditions under which midwives may be suspended from practice in penal cases had on Dec. 20th, 1918, been forwarded to the Scottish and Irish Boards for their information and that no comment thereon had been received from either Board. The Board decided that the secretary be directed to forward to the Privy Council copies of the draft rules framed by the Board under Section 6 of the Midwives Act, 1918, and to request the Privy Council to approve them.—The Board having considered the form of certificate to be granted to women certified by the Board by reason of holding an equivalent certificate obtained in any other part of His Majesty's Dominions directed that the draft forms of certificates as submitted by the secretary be adopted and that they be forwarded to the Privy Council for approval.

IMPERIAL STUDIES LECTURES.—A course of six public lectures, arranged in connexion with the Imperial Studies Committee of London University, will be given at King's College, Strand, W.C., on Wednesdays at 5.30 P.M. The first lecture is by Professor W. D. Halliburton on Physiology and the Food Problem, with Sir Alfred Keogh in the chair. The other lectures will be announced from week to week in the Medical Diary. Cards of admission (free) on application to the lecture secretary.

MEDICAL INSPECTION OF SCHOOL CHILDREN.—At Exeter last week a parent summoned a school medical officer and the school nurse for assaulting his daughter, aged 11 years, by conducting a medical inspection of the child's eyes without his consent. The summons was dismissed. Another summons was then proceeded with, when the parent was charged with neglecting to have the child's eyes attended to. The defendant suggested that he should be allowed to take the girl to an ophthalmic surgeon and to provide spectacles if necessary. The bench of magistrates agreed to this proposal and adjourned the case for a week.

ROYAL INSTITUTION.—On Tuesday next, Feb. 4th, at 3 o'clock, Professor J. T. Macgregor-Morris will deliver the first of a course of two lectures at the Royal Institution on the Study of Electric Arcs and their Applications. On Thursday, Feb. 6th, Dr. W. Wilson will give the first of two lectures on the Movements of the Sun, Earth, and Moon, illustrated by a new astronomical model. The Friday evening discourse on Feb. 7th, at 5.30, will be delivered by Professor J. G. Adami on Medical Research in its Relationship to the War; on Feb. 14th by Professor Cargill G. Knott on Earthquake Waves and the Interior of the Earth.

THE LATE MR. W. A. E. HAY, M.R.C.S., L.S.A., J.P.—William Alfred Edward Hay died at his residence, West Allington, Bridport, on Jan. 18th, in his 66th year. The deceased, who belonged to an old Dorsetshire family, had been in practice for many years in Bridport. He held several appointments and was medical officer of health for the Bridport rural district. He was formerly surgeon-major in the 1st V. B. Dorset Regiment and was a justice of the peace for the borough of Bridport.

ROYAL MEDICAL BENEVOLENT FUND.—At a meeting of the committee, held on Jan. 14th, 17 cases were considered and £175 voted to 14 of the applicants. The following is a summary of some of the cases relieved:—

Daughter, aged 50, of M. B. Lond. who practised in Staffordshire and died in 1885. Loss of income through bad investments. Bad health will not allow applicant to work. Only income 10s. a week from a nephew and help from the Guild. Relieved four times, £40. Voted £12 in 12 instalments.—Widow, aged 70, of L.R.C.P. & S. Irel. who practised in Essex and died in 1886. Applicant left without means and lives with a married son who has a large family and is unable to help his mother. Pays 3s. per week rent. Only income an Epsom Pension of £30. Relieved seven times, £34. Elected to an annuity of £20.—L.R.C.P. & S. Edin., widower, aged 61, who practised at Old Kirkpatrick. Applicant suffers from spastic paralysis. Has one son who allows £50 a year; other income £20 from another charity. Rent £26 10s. Relieved 14 times, £168. Voted £12 in 12 instalments.—Daughter, aged 65, of M. D. Edin. who practised at Baling and died in 1873. Applicant, along with two sisters, endeavours to make a living by taking in paying guests, but finds it difficult to meet expenses. Other income: dividends, £46; from relatives, £30; rent £40. Wants help to provide coal. Relieved three times, £35. Voted £10.—Widow, aged 50, of L.S.A. Lond. who practised in London and died in 1911. Was left with two young boys, now aged 14 and 16 years. Precarious health prevents applicant from doing any permanent work. Sister-in-law allows 30s. per week. Rent £18 a year, and £18 paid for insurance for children. High cost of living makes it impossible for applicant to manage. Relieved three times, £25. Voted £10.—Wife, aged 52, of L.R.C.P. Irel., separated from her husband since 1905. Had to bring up three children, now aged 18 to 23, the youngest, a son, in the Army. Other children help when possible. Has a pension of £21 from the R.U.K.B.A. Has done some work at a V.A.D. hospital, but this has now finished. Is suffering from an eye trouble. Relieved five times, £50. Voted £12 in 12 instalments.—Widow, aged 53, of M.R.C.S. Eng. who practised at Bexhill and died in 1912. Has two children, the eldest 24, who is a clerk, not living at home, and the youngest daughter, aged 14 years, at St. Anne's School, and has to be kept during the holidays and provided with clothes. Applicant has post as companion, at £20 per annum. Relieved four times, £40. Voted £10 in two instalments.—Widow, aged 33, of M.R.C.S. Eng. who practised at Swansea and died in 1914. Applicant lives with her mother, who is unable to keep her. Only child, aged 10, at St. Anne's School, but has to be kept during the holidays and clothed. Applicant's health is bad, and she is unable to work. Helped by the Guild. Relieved four times, £48. Voted £12 in 12 instalments.—Daughter, aged 66, of M.R.C.S. Eng. who practised at Watford and died in 1879. Owing to ill-health unable to work. Income from property £26; R.U.K.B.A., £26; and occasional help from friends. Rent 3s. per week. Relieved 12 times, £135. Elected to an annuity of £10.—Daughter, aged 68, of L.R.C.S. Edin. who practised at Liverpool and died in 1893. Applicant endeavours to earn a living by letting rooms, but owing to the high cost of living finds it impossible to meet expenses. Health has been bad recently. Rent £25 per annum. Has received about 16s. per week by letting rooms. Relieved twice, £17. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

JAN. 26TH was observed in Bristol as Hospital Sunday.

In the Governors' Hall at St. Thomas's Hospital, to-day (Friday, Jan. 31st), at 4.30 P.M., Major-General Cuthbert Wallace, C.B., C.M.G., will deliver a lecture on the Surgical Work of a Casualty Clearing Station.

THE King of the Belgians has conferred the Chevalier de l'Ordre de Léopold upon Dr. A. George Bateman, of London, for services rendered to Belgium during the war.

SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.—As a result of the Hospital Sunday collections on Oct. 27th, 1918, the sum of £623 was raised for the funds of this hospital.

ADVISORY COMMITTEE ON ANTHRAX.—The Home Secretary has appointed an advisory committee to deal with the establishment of a trial disinfecting station as recommended by the Departmental Committee on Anthrax, and with other measures of protection against accidental infection. The secretary of this as of the previous committee is Mr. G. E. Duckering, one of H.M. Inspectors of Factories. Address: 72, Bridge-street, Manchester.

THE LATE DR. B. W. CHERRETT, OF NAIROBI.—Mr. Bertram Walter Cherrett, M.B., B.S. Lond., died at Nairobi, British East Africa, of influenza, on Nov. 4th. Trained at St. Bartholomew's Hospital, London, he qualified in 1906, and for eight years past had been medical officer of health to the Protectorate. Known all his life as a cheery worker, the Nairobi *Leader* speaks of him as the type of British official imbued with the "true spirit of public service."

THE Swiney prize of the Royal Society of Arts for 1919 has been awarded, as was announced in THE LANCET last week, to Dr. C. A. Mercier for his book, "Crime and Criminals," published in December, 1918. The prize is a silver-gilt cup designed by MacIise, and of the value of £100, and money to the same amount. It is awarded every fifth year to the writer of the best work on jurisprudence published since the last award, being given alternately for general jurisprudence and for medical jurisprudence. The prize was founded in 1844, and in the 75 years of its existence has been awarded sometimes to very distinguished men. Dr. Mercier won the Swiney prize in 1909, and this is the first occasion on which it has been awarded to the same candidate for the second time.

DEATH OF MR. G. V. LANGWORTHY, M.R.C.S., L.M. Eng., L.S.A.—George Vincent Langworthy died recently at his residence, Modbury, Devon, in his 83rd year. He was the third son of the late Mr. W. F. Langworthy, surgeon, of Modbury. Mr. Langworthy, who qualified in 1864, practised for many years in Modbury with his brother, Mr. W. F. Langworthy, but had retired from active work for more than 20 years. He had an extensive practice, and was highly esteemed in the district.

SCOTTISH POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—In their report for the year 1918 the committee state that practically no correspondence had taken place with regard to the grievances noted in their annual report for 1917, and that up to the present time the offer of the secretary of the Association to accompany a deputation of the Highland members to bring their grievances before the Highlands and Islands Service Board had not been accepted. The grievances referred to were the unsatisfactory conditions as regards income, area, and facilities attaching to the work of the medical officers in the crofting counties. During the year a circular had been sent to parish councils asking for an increase in salaries, and although the total number of increases granted was not known, the secretary reports that he has knowledge of increases of a rise of 25 to 50 per cent. reported in more than 50 cases.

SPECIAL EXAMINATIONS FOR THE PRIMARY F.R.C.S. ENG.—The Council of the Royal College of Surgeons of England has decided to hold a special primary examination in anatomy and physiology for the Fellowship for surgeons who hold or have held commissions during the war and have done commendable surgical work during their service. The examination will be partly written and partly viva voce; the questions asked will have a direct bearing on practical surgery and will not include morphology, embryology, histological or chemical methods, or practical examination in the use of the apparatus of the physiological laboratory. The first of these special examinations is to be held early in May and the second in November of the current year. A third examination is planned for some time in 1920. Entrance will be permitted only to one such examination. Candidates must be Members of the College or graduates in medicine of a university recognised by the College. Further particulars may be obtained from Mr. F. G. Hallett, at the Examination Hall, Queen-square, London, W.C. 1.

Appointments.

BRASH, EDWARD JOHN YELVERTON, B.A., M.B., B.C. Cantab., L.R.C.P., M.R.C.S., has been appointed Public Vaccinator for Exeter, and Medical Officer for the No. 1 District.
COATES, VINCENT MIDDLETON, L.R.C.P., M.R.C.S., Pathologist at the Salonica Military Hospital.
HODDER, A. E., M.B., B.C., Certifying Surgeon under the Factory and Workshop Acts for the Stafford No. 2 District of the County of Stafford.
McMURRAY, A., F.R.C.S., acting Assistant Medical Officer of Health, Johannesburg.
REYNOLDS, FRANCIS MORTIMER, M.B., C.M. Edin., Medical Officer of Health for Seaton (Devon).
RIGGALL, ROBERT M., M.R.C.S. Eng., L.R.C.P. Lond. & Edin., Surgeon Lieut.-Commander R.N., Medical Officer to the Clinic of Functional Nerve Disorders under the Ministry of Pensions.

Vacancies.

For further information refer to the advertisement columns.

Alnwick Infirmary.—H.S. £150.
Bedford County Hospital.—Res. M.O. £150.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Birmingham Corporation Pre-Maternity and Infant Welfare Work.—Female Doctor. £350.
Birmingham General Hospital.—Vacancies on Res. Staff.
Birmingham, Queen's Hospital.—Hon. S.
Buenos Aires, British Hospital.—Senior R.M.O. and Asst. R.M.O. £500 and £450.
Cardiff City.—Female Asst. M.O. £350.
Chester Royal Infirmary.—H.S. £200.
Devonport Royal Albert Hospital.—Res. H.S. £200.
Edmonton Infirmary.—Asst. M.O. £1 per day.
Folkestone, Royal Victoria Hospital.—H.S. £150.
Glamorgan County Council.—Inspection of Children in Public Elementary Schools.—Three M.O.'s. £400.
Govan District Asylum, Cardonald, Glasgow.—Sen. Asst. M.O. Also Jun. Asst.
Harrogate Infirmary.—H.S.
Isleworth Infirmary.—Asst. M.O.'s. £300 and £250.
Italian Hospital.—H.S. £150.
Johannesburg, South African School of Mines and Technology.—Professors of Anat. and Physio. £1000 in each case.
Kingston-upon-Thames Borough Education Authority.—School M.O. £300.
Leeds General Infirmary.—Res. S.O. £150. Res. Aural O. £100. Oph. H.S. £50. Res. M.O. £60. Also Two H.S. and Two H.P.
London Homoeopathic Hospital, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Clin. Path. and Bact. £200.
Norwich, Norfolk and Norwich Hospital.—Fourth Res. Surg. O. £200.
Portsmouth Corporation Mental Hospital.—Jun. Asst. M.O. £250.
Portsmouth Workhouse Infirmary, Workhouse, and Children's Home.—First Asst. M.O. £500.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.
Royal National Orthopaedic Hospital.—Res. H.S. £100.
St. Bartholomew's Hospital.—Refraction Assts. One guinea per session.
St. Mark's Hospital for Cancer, Fistula, and Other Diseases of the Rectum, City-road, London, E.C.—H.S. £250.
Smethwick County Borough.—M.O.H. £300.
South London Hospital for Women.—Female Asst. Path. £150.
Southport General Infirmary.—Jun. H.S. £5 5s. per week.
Teakbury Union.—M.O. £55.
University of London.—Examiners.
Warwickshire County Council.—Asst. M.O.H. £400.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Vacancies on Medical Staff.
West Ham Union Sick Home, Forest-lane, Stratford, E.—Temp. Res. Asst. M.O. £6 6s. per week.
Westmorland County Council.—Female Asst. M.O. £400.
Windsor, King Edward VII. Hospital.—Asst. Hon. S.
THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Hitchin.

Births, Marriages, and Deaths.

BIRTHS.

BATE.—On Jan. 28th, at Hove, the wife of Captain A. G. Bate, R.A.M.C. (T.F.), of a daughter.
COLLYNS.—On Jan. 10th, at Kampala, Uganda, the wife of John Moore Collyns, M.B., Colonial Service, of a son.
McMILLAN.—On Jan. 19th, 1919, at Dublin, Patricia (née Smyth), the wife of Temporary Surgeon Kenneth H. McMillan, R.N., of a son.

MARRIAGES.

BUTCHER-SINCLAIR.—On Jan. 18th, at the Church of St. Oswin, South Shields, Walter Herbert Butcher, Temporary Surgeon-Lieutenant, R.N., to Cecilia St. John, youngest daughter of D. Sinclair, Brinkburn-terrace, South Shields.

DEATHS.

COGHILL.—On Jan. 24th, at Guildford, Harold Sinclair Coghill, M.B., Ch.B. Edin., D.T.M. Lond. (W.A.M.S.), aged 38.
LE QUESNE.—On Jan. 24th, at "Melbury, Havre des Pae, Jersey, Edwin Joseph Le Quesne, M.R.C.S., L.R.C.P., in his 68th year.
SAWYER.—On Jan. 27th, at his residence, Haseley Hall, Hatton, Warwick, Sir James Sawyer, M.D. Lond., F.R.C.P. Lond., in his 75th year.
N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY, Feb. 6th.—Papers:—Mr. A. Mallock: Note on the Elasticity of Metals as affected by Temperature.—Mr. W. L. Cowley and Mr. H. Levy: Vibration and Strength of Struts and Continuous Beams under End Thrusts (communicated by Sir Richard Glazebrook).—Mr. A. Dey: A New Method for the Absolute Determination of Frequency (with a prefatory note by Mr. C. V. Haman) (communicated by Dr. G. T. Walker).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. 1.

Wednesday, Feb. 5th.

SOCIAL EVENING: at 8.30 p.m.

Sir John Blain-Sutton will discourse on "Gizzards and Counterfeit Gizzards," illustrated by Specimens. The Library will be open and visitors are invited to raise and discuss any question in which they are interested. (Tea, coffee, and smoking.)

Medical Officers of the Navy, R.A.M.C., the Dominions, United States, and the Allies are cordially invited.

MEETINGS OF SECTIONS.

Tuesday, Feb. 4th.

PATHOLOGY (Hon. Secretaries—Gordon W. Goodhart, J. A. Murray): at 8.30 p.m.

Papers:

Dr. J. A. Murray: A Staining Method for Bacteria in Tissues.

Dr. Murray will also give a Demonstration of Acariasis of the Lungs in the Macacus Rhesus.

Mr. C. A. R. Nitch and Professor S. G. Shattock: Diffuse Emphysema of the Intestine.

Wednesday, Feb. 5th.

OPHTHALMOLOGY (Hon. Secretaries—Leslie Paton, Malcolm Hepburn): at 8.30 p.m.

Papers:

Dr. James Taylor: Changes in the Sella Turcica in Association with Leber's Atrophy.

Dr. W. Wallace: Fundus Changes resulting from War Injuries.

Mr. R. Foster Moore: A Case of Sympathetic Ophthalmitis with Fundus Changes.

Cases:

Mr. A. C. Hudson: Retinal Degeneration following Intraocular Foreign Body.

Thursday, Feb. 6th.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Comyns Berkeley, J. S. Fairbairn): at 8 p.m.

Discussion:

On Reconstruction in the Teaching of Obstetrics and Gynecology to Medical Students. Speakers:—

Dr. Walter Griffith: A General Survey of the Subjects to be Taught and of the Methods of Teaching them.

Dr. J. S. Fairbairn: The Training of the Student from the Standpoint of Preventive Medicine.

Dr. Lovell Drage: The Teaching of the Student from the Point of View of a General Practitioner.

Dr. Russell Andrews, Dr. Blacker, and Dr. Amand Routh will also speak.

Dr. Lapborne Smith will show "The Obstetric Helper."

Those wishing to take part in the Discussion are requested to send in their names to the Senior Hon. Secretary of the Section (Mr. Comyns Berkeley, 53, Wimpole-street, W. 1).

Copies of the Opening Papers will be available for distribution to intending speakers a week before the meeting on application to the Secretary of the Society.

Friday, Feb. 7th.

LARYNGOLOGY (Hon. Secretaries—Frank A. Rose, Irwin Moore): at 4.30 p.m.

Cases will be shown at 3.45 p.m. by:—

Dr. Andrew Wylie, Mr. Stuart-Low, Mr. G. Seccombe Hett, Dr. Irwin Moore, Dr. W. S. Syme, and Dr. Macleod.

RÜNTGEN SOCIETY, at the Royal Society of Arts, 18, John-street, Strand, W.C.

TUESDAY, Feb. 4th.—8.15 p.m., General Meeting. Paper: Dr. F. Herniman-Johnson, Hon. Capt., R.A.M.C.: Protection in Diagnostic Work: A Consideration of the Effects of Scattered Rays and Secondary Rays.—Lieut. W. Makower will describe and exhibit a Langmuir Exhaust Pump.

HUNTERIAN SOCIETY.

WEDNESDAY, Feb. 5th.—7 p.m., Annual Dinner at Cannon Street Hotel, the President, Dr. Langton Brown, in the chair.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, in the Theatre of the College, Lincoln's Inn Fields, W.C.

MONDAY, Feb. 3rd.—5 p.m., Hunterian Lecture.—Prof. A. J. Walton: The Surgery of the Spinal Cord in Peace and War.

WEDNESDAY—5 p.m., Hunterian Lecture.—Prof. D. Ligat: The Significance and Surgical Value of Certain Abdominal Reflexes.

FRIDAY—5 p.m., Hunterian Lecture.—Prof. G. Taylor: Abdominal Injuries of Warfare.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, Feb. 3rd.—2 p.m., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simon: Diseases of Women.

TUESDAY—2 p.m., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY—10 a.m., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 p.m., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THURSDAY—2 p.m., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye. **FRIDAY**—10 a.m., Dr. Simon: Gynaecological Operations. 2 p.m., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. **SATURDAY**—10 a.m., Dr. Arthur Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 p.m., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.

Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—

WEDNESDAY, Feb. 5th.—5.30 p.m., Lecture I:—Prof. W. D. Halliburton: Physiology and the Food Problem.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), at the Lecture Theatre of the Medical School, King's College Hospital, Denmark Hill, S.E.

Course of Four Lectures on Malaria. Microscopic specimens and lantern slides will be shown at the two last lectures.

FRIDAY, Feb. 7th.—12 noon, Lecture II:—Col. Sir Ronald Ross, K.C.B., K.C.M.G., F.R.S. Officers and Men of the Royal Army Medical Corps are invited to attend.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, Feb. 5th.—4 p.m., Mr. W. Buckley: Practical Steps that should be taken to ensure a National Clean Milk Supply.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street Piccadilly, W.

FRIDAY, Feb. 7th.—5.30 p.m., Prof. J. G. Adams: Medical Research in its Relationship to the War.

BOOKS, ETC., RECEIVED.

LEA AND FEBIGER, Philadelphia and New York.

A Text-Book of Biology. By W. M. Smallwood, Ph.D. 3rd ed. 10s. 6d.

LIVINGSTONE, E. AND S., Edinburgh.

Hughes' Nerves of the Human Body. By C. R. Whittaker, F.R.C.S. Edin. 2nd ed. 3s. 6d.

MASSON ET CIE, Paris.

L'Expertise Mentale Militaire. Par A. Porot et A. Hespard. 4 fr.

Traité de Physiologie. Tome V. et dernier: Fonction de relation et fonction de reproduction. Par J. P. Morat, professeur à l'Université de Lyon, et M. Doyon, professeur adjoint à la Faculté de Médecine de Lyon. 25 fr.

MILFORD, HUMPHREY, London.

Destroyers and Other Verses. By Henry Head, M.D. 4s. 6d.

MURRAY, JOHN, London.

Handbook of Physiology. By W. D. Halliburton, M.D. 14th ed. 16s.

NATIONAL FOOD REFORM ASSOCIATION, London.

Dietaries Suitable for Secondary Schools, &c. By Dorothy C. Moore, L.C.A., and C. E. Hecht, M.C.A. 1s. 3d.

PANINI OFFICE, Allahabad.

Diabetes and its Dietetic Treatment. By B. D. Basu, Major, I.M.S., retired. Rs 1.8.

UNIVERSITY PRESS, Cambridge.

Technical Handbook of Oils, Fats, and Waxes. By P. J. Freyer, F.I.C., and F. E. Weston, B.Sc. Vol. II.

UNIVERSITY PRESS, Manchester. **LONGMANS, GREEN, AND CO.**, London.

Dreams and Primitive Culture. By W. H. R. Rivers, M.D. 1s.

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. F. S. Arnold, Berkhamsted; Dr. J. E. Adams, Lond.; Prof. Ch. Achard, Paris; Messrs. Allen and Hanburys, Lond.

B.—Lieut.-Col. A. Balfour, C.M.G., R.A.M.C.; Major-Gen. Sir J. Rose Bradford, A.M.S.; Major-Gen. Sir Anthony Bowlby, K.C.M.G., K.C.V.O., C.B., A.M.S.; Surg.-Gen. R. Blue, Washington; Board of Agriculture and Fisheries, Lond.; Sir J. Bland-Sutton, Lond.

C.—Mr. A. L. Clarke, Lond.; Dr. J. B. Christopherson, Khartoum; College of Nursing, Lond., Sec. of; Dr. J. Campbell, R.A.M.C.; Sir James Cantlie, Lond.; Conjoint Board of Scientific Societies, Lond.

D.—Dr. F. W. Dobbin, Ballinacree; Mr. H. Dickinson, Lond.; Dr. A. Eichholz, Lond.

E.—Dr. H. L. Flint, Mansfield; Factories, Chief Inspector of; Mrs. Bedford Fenwick, Lond.

G.—General Medical Council, Lond., Acting Registrar of; Mr. C. R. Hewitt, Lond.; Prof. W. D. Halliburton, Lond.; Dr. C. W. Hutt, Brighton; Dr. J. F. Horne, Barnsley.

J.—Brevet-Major J. L. Joyce, R.A.M.C. (T.)

K.—Capt. M. A. Kirton, R.A.M.C. L.—Messrs. Lawson and Co., Lond.

M.—Mr. J. M. Martin, Gloucester; Dr. C. A. Mercier, Parkstone; Mr. J. W. Milne, Lond.; Rev. S. Matthews, Dublin; Capt. W. MacAdam, R.A.M.C.

N.—National Medical Union, Asst. Sec. of; Dr. J. T. Neech, Halifax; National Council for Combating Venereal Diseases, Lond.

O.—Dr. J. Oliver, Lond. **P**.—Dr. M. Pettinati, Lond.

R.—Royal College of Surgeons of England, Lond.; Dr. J. W. Rob. Weybridge; Capt. O. H. L. Rixon, R.A.M.C.; Mr. D. D. Robertson, Lond.; Dr. W. C. Rivers, Worsboro' Dale; Royal Sanitary Institute, Lond.

S.—Mrs A. H. Smith, Lond.; Mr. S. T. Shovelton, Lond.; Dr. B. W. Scripture, Lond.; Mr. W. Scott, Bridgewater; Lieut. L. Stamm, R.A.F.; Mr. E. G. Slesinger, Lond.; Dr. T. H. C. Stevenson, Lond.

T.—Mr. G. F. Tidbury, Lond.; Sir N. Tirard, Lond.

W.—Dr. S. West, Lond.; Mrs. K. Warren, Lond.

Y.—Miss M. Yates, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2

Notes, Short Comments, and Answers to Correspondents.

INDUSTRIAL UNREST AND THE NEW PUBLIC HEALTH.

At a meeting of the Royal Institute of Public Health on Jan. 22nd, at which Lord Moulton presided, Dr. I. Walker Hall, professor of pathology in the University of Bristol, delivered a lecture on Industrial Hygiene in Relation to War Strain and Technical Development. He started from the assumption that the events of the last four years had profoundly altered the enduring capacity of the people of this country, and it was more than possible that some of the present industrial unrest was due to this cause. The war had been responsible for various degenerations of the cardiac and vascular systems, for alterations in the pulmonary tissues, both directly as a result of chest wounds and inhalation of poison gas, and as a sequel to widespread epidemics. Trench fever and war nephritis had, in their turn, impaired the renal tissues. There would consequently be a considerable percentage of people unable to bear climatic change and fatigue. Mental strain, malaria, and venereal diseases were further factors to be taken into account, as well as the crippled condition of many whose wounds had healed. In view of these things we were, he said, faced by the need for a more rigorous application of hygiene in industrial life. Revision of the existing regulations might well be necessary, and as a beginning a routine attempt should be made at estimating the man's liability to fatigue and generally at defining the limits of physical endurance of working units. Medical officers of works would in future have to pay more attention to this side of their work than to therapeutic problems. Research would be necessary in regard to new industries which might bring in their train new industrial dangers and diseases. America had reported 32 new poisons in the preparation of munitions of war, and in the coming days of peace workers ought not to be subjected to the risks of such poisons until the conditions of their harmful action were definitely known. Proposals for increased production or lessened cost must always be considered alongside an estimate of the possible dangers to the health of the worker resulting from the change. New processes before being tried on a commercial scale should all be investigated in the laboratory, both in regard to possible ill effects on animal tissues and with a view to prevention of these ill effects. But when all this had been done the human factor still remained. It was here that legal provisions might fail and the only remedy might prove to be the conscientious discharge of his duties by the medical officer of the factory, who would in the coming years devote more of his time to the workers than to the works. On the data obtained from the experimental laboratory the doctor would be in a position to observe closely the danger stages in all industrial processes and to assess the precise value of precautionary measures. Professor Hall concluded by reminding his hearers that the habits of the working man, as of all of us, were formed in childhood, and while these habits might be modified or consolidated in school life, no education, however skilfully devised, could replace the teaching of the primary habits of body which should be taught in the home. The hygienic status of the worker was cradled in the training of the child. He looked to a great crusade directed towards raising the standards of home-life.

Lord Moulton agreed with the lecturer in tracing the ultimate value of an industrial population to early training in childhood, but he had found the chief hygienic difficulty of the last four years to lie in the technical character of the work rather than in the quality of the workmen. It was especially difficult to make working men appreciate the importance of hygienic rules to be observed by themselves or recognise that neglect of cleanliness might lead to illness and possible death. The colossal demand made on the worker by the chemical side of munitions work had not led, in his opinion, to any undue strain. To find evidence of overstrain it was rather to the mechanical side of munitions manufacture that attention should be turned. While competition was ever becoming keener the working classes themselves were likely to take care that the conditions of work did not become more trying. To those who were not content with their existing level and prospects an increasing temptation arose to over-exert themselves. The danger in the future was far greater to this exceptional class than to the ordinary worker, whose future was clouded rather by the danger of carelessness in health and manner of life.—Miss Anderson welcomed the lecturer's recognition that men and women were highly endowed agents rather than mere instruments in industry. The service rendered by warfare work to industrial organisation had already been proved.—Dr. T. M. Legge concurred with the lecturer in the desirability of investigating

processes technically in the laboratory before they were introduced into the works.—Dr. E. L. Collis remarked on the incompleteness of our medical knowledge of industrial life at the beginning of the war. In the past medical practice had dealt mainly with agricultural pursuits, the doctor living among his patients and knowing accurately their conditions of work and consequently the proper methods of treatment. Whatever medical knowledge a practitioner possessed he could not give the same useful advice to his industrial patients that his grandfather gave to his agricultural patients if he was totally unacquainted with their conditions of daily work. Here was an entirely new field of preventive medicine opening before them.

THE HYGIENIC REPAIR OF THE ROADS.

It has been freely stated that something like a sum of £40,000,000 will be required to restore to our roads, badly broken by heavy military traffic, a uniform surface. Our road authorities are, no doubt, seriously exercising their minds as to the best way this work of repair can be done. For the ordinary traffic of the country the dressing of the surface of roads with tar and grit seemed temporarily at least to suppress the dust nuisance created by fast motor vehicles. Such a dressing appeared to be a cheap and ready form of asphaltting the surface, and the way tar and grit subsequently set and hardened on the top suggested that a definite and unexpected combination took place. In a communication we have received from Dr. J. A. Calantar he points out also that the basic fault of roads treated in this way (except wood-paved ones) is that they are grouted with a very large proportion of whinstone sand, gravel, granite chips, and other earthy, gritty substances which in time get pulverised by traffic and give rise to dust and mud, and by this circumstance quickly wear away. His proposal is that all these earthy substances should be completely excluded from road surfaces, and in their place some fibrous substances, such as sawdust, should be used in combination with hot bitumen or pitch and creosote or other non-drying oil well amalgamated and laid on the roads, as ordinary asphalt is done. He points out that sawdust cannot be pulverised; it absorbs the hot bitumen or pitch and oil into its innermost fibres, which get matted together and when cold present a very hard, tough mass, which can neither be broken nor made into powder. Such a surface, he maintains, will be water-tight, not liable to decay, free from dust and mud, still be resilient, not cold to the feet, noiseless, and more durable than asphalted roads. The effects of traffic on such a surface are anticipated to make it, if possible, more dense, because the particles, being adhesive, will cohere together still more strongly under the pressure, instead of getting pulverised as the road surfaces are now. Such claims sound attractive, and if based on actual practical trials should receive the careful attention of our road authorities. Objection as to the contamination of rivers, streams, and lakes is urged, and a good deal turns on the question as to whether sawdust is available in anything like the quantities or the low prices that prevail for granite chippings.

COLONIAL HEALTH REPORTS.

Malta.—According to the Blue-book for the year 1917-18, the civil population on April 1st last was estimated at 224,323, an increase on the previous year of 582. The birth-rate for the year was 29.81 per 1000, and the death-rate 26.22 per 1000. The death-rate among children under 12 months was 293.51 per 1000 births, as against 253.80 in the previous year; that of children under 5 years was 128.35 per 1000 of the population at that age, as compared with 105.80 in the previous year. There were 1496 marriages, as compared with 1274 in the previous 12 months. Small outbreaks of enteric and measles occurred during the year, and a considerable epidemic of whooping-cough. There was also an increase in the number of cases of pulmonary tuberculosis. Apart from these circumstances, the general state of health of the two islands may be regarded as satisfactory. The number of goats and sheep found infected with undulant fever and destroyed was 287 out of a total of 5944 that were examined. 4011 persons were successfully vaccinated. The mean temperature for the year was 64.8, as compared with 66.3 in 1916-17. The total rainfall was 17.71 inches -1.98 more than in the previous year. The number of patients admitted into the hospitals of Malta and Gozo was 3610, and 148,116 persons were attended by the district medical officers at the Government dispensaries or at their own residences. The number of inmates in the leper hospital on March 31st, 1918, was 98, as against 114 at the end of the previous year. Since the last annual report, it has been found possible to dispense with many of the hospitals which had been opened to meet military requirements during the earlier stages of the war.

Croix de Guerre would be glad to know of a print or photograph of Saint Luke suitable for the centre light of a stained glass window to be erected in memory of a medical man.

A Lecture

ON

GIZZARDS AND COUNTERFEIT GIZZARDS

*Delivered at the Royal Society of Medicine on
Feb. 5th, 1919,*

BY SIR JOHN BLAND-SUTTON, F.R.C.S. ENG.,
SURGEON TO THE MIDDLESEX HOSPITAL.

IT is a simple lesson in anatomy to watch a cook gut a fowl, open the gizzard, wash out the stones, and after turning it inside out she skewers the gizzard under one wing and the liver under the other. The bird is then ready for the front of a fire or the inside of an oven. Boys who have watched the trussing of fowls learn from this simple lesson that cocks and hens are not always gathering grain when they diligently peck about the barn-yard. They pick up also small stones. An inquisitive boy asks: Why do birds swallow stones? and in this way learns the relationship between the absence of teeth in birds and the need of a gastric-mill for grinding the hard seeds they swallow.

STRUCTURE AND FUNCTION OF THE GIZZARD.

The stomach of most birds consists of a proventriculus, which is glandular, and the gizzard, or grinding portion, which has thick muscles and a hard lining. The muscularity of the gizzard and the thickness of its lining depend entirely on the nature of the food, in the same way that the skin covering the palm of the hand varies with occupation.

John Hunter experimented to find out the nature and use of the gizzard. The gull, a fish and flesh eater, has a thin-walled gizzard, but when fed on grain the walls thicken and the gizzard resembles that of a grain-eating bird. Hunter also noticed that when the gizzard is working the noise of the grinding can be heard if the ear be placed on the side of the fowl—a simple and curious lesson in auscultation. With

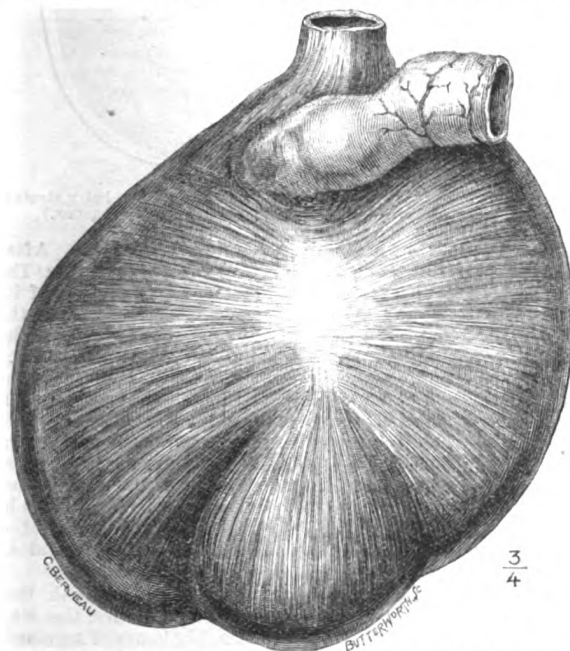


FIG. 1.—The gizzard of a turkey, showing the central tendon and its relation to the muscular bundles.

patience and care cocks and hens soon submit quietly to the examination. Under the X rays the movements of the small stones are easily seen, and without distress to the bird.

The grinding power of the gizzard in some birds is great, for the stones they swallow are polished like pebbles. Birds swallow hard bodies promiscuously. It is not uncommon to find in gizzards pieces of glass and crockery, pins, needles, hooks and eyes, and occasionally coins. Pointed pieces of

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metal sometimes stick through the walls. Birds that live on fish often have the gizzard pierced with fish-bones. The bustard is a grand bird, and at one time common in England. The museum at Salisbury contains two stuffed bustards, reputed to be the last two examples shot on Salisbury Plain. When the gizzards were opened they contained, among other stones, some flint arrow-heads.

The gizzard of the ostrich is big and powerful; this bird shows little sense in selecting objects for swallowing, especially when confined in a menagerie—stones, glass, and glittering objects, especially coins, which it will snatch from the hands of children. William Hunter's collection at Glasgow contains the gizzard of an ostrich with a wooden peg 3 inches long sticking through a hole in its wall. This gizzard also contained pieces of a silver buckle. I found, among other odd things, 49 bronze coins and a fourpenny-bit in the gizzard of an ostrich that had long been in the Zoological Gardens, Regent's Park. The coins were smoothed and some were thinned and edged like knives. An ostrich in the menagerie at Clifton swallowed a Book of Common Prayer and died soon afterwards. Dr. Harrison examined the bird and found the remnants of the book. Nearly the whole of this Prayer Book had been destroyed, but the Thirty-nine Articles were intact; even an ostrich found them indigestible—too many and too much.

One of the most remarkable gizzards among birds is found in the snake-bird or darter; it has a third compartment, known as the pyloric bulb, that leads into the duodenum. (Fig. 4.) The bulb is beset with a thick fringe of hairs serving as an excellent strainer to hinder fish-bones entering the narrow intestine. Snake birds are voracious fish-eaters. Hairs are sometimes found on the walls of the cuckoo's gizzard, but they have a different origin.

HAIR BALLS.

The nature and direction of the movement of the stomach have occupied the attention of many physiologists. It is a matter of common observation that hairy animals lick their skins and swallow the hair, which is felt by the motion of the stomach and forms a ball. When such a ball is divided

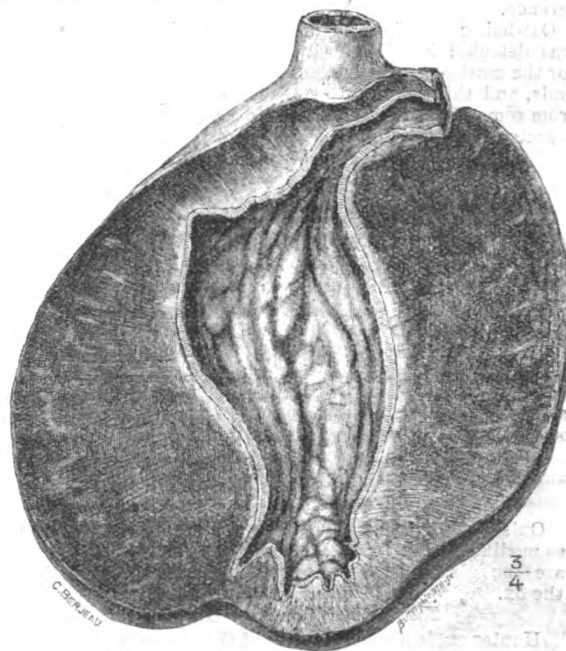
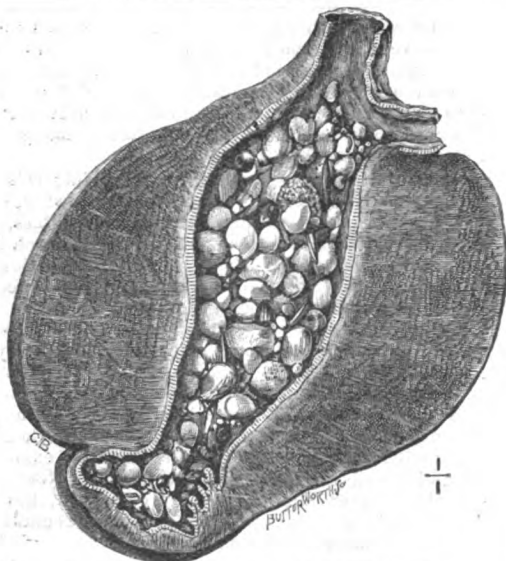


FIG. 2.—Gizzard of a turkey in section, showing the thick muscular walls.

the hairs will be found to lie in the same direction. Hunter noted that this effect could only be produced by a regular motion of the stomach. He studied the arrangement of the fine hairs that are occasionally found in the gizzard of the cuckoo. In certain seasons this bird lives on the hairy caterpillars of the tiger moth known as woolly bears, and the hairs stick on the walls of the gizzard and acquire a regular spiral arrangement due to its rotatory motion.

F

FIG. 3.—Gizzard of a fowl, with stones *in situ*.

OAT-HAIR CONCRETIONS.

The Hunterian collection contains a number of concretions, irregular in form and of various sizes, found in the great intestine of men and women who lived for the most part in Scotland and the northern counties of England. These concretions, large examples of which may be as big as the fist, are dirty white or brown, smooth externally, and exceedingly light. On section they displayed concentric layers of a fibrous substance, felted, velvety to the touch, and with a foreign body, such as a piece of bone, or metal, or a fruit stone, for the nucleus (Fig. 5). Alexander Munro, sen., had in his collection 42 examples of such concretions, varying in size from a pea to masses 6 inches in circumference.

Oat-hair concretions puzzled many until their composition was detected by Wollaston. He found that they consisted for the most part of velvety vegetable fibres pointed at both ends, and this led him to suspect that the concretions arose from some kind of food peculiar to Scotland. Clift, the conservator of Hunter's museum, suggested to Wollaston that the fibres might come from oats, and on examining oats, the vegetable material of the concretions was found to be identical with the fine hair-like bodies within the husks. Portions of oat-husks and other vegetable fibres are found in the concretions, and it was definitely established that they chiefly occur in persons who live upon undressed oatmeal. A century ago oat-hair concretions were common in Scotland, but they are uncommon now, and this is probably due to improvements in dressing oatmeal and the decreased use of it as a food.

Oat-hair concretions occur in horses, usually in the cæcum and colon. The farrier calls them "dung-balls."

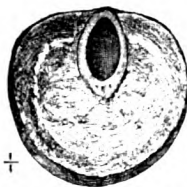


FIG. 5.—Oat-hair concretion in section.

Outside of the bird tribe there are animals with stomachs so modified as to resemble gizzards. The most remarkable are the gizzard trout, the grey mullet, the crocodile, and the ox.

COUNTERFEIT GIZZARDS.

The Gizzard Trout and Grey Mullet.

Hunter made a special study of the stomach of the gizzard trout and, as lawyers would say, he stated a case which is well worth consideration.

In the gillaroo trout, known in Ireland as the gizzard trout, a portion of the siphonal stomach is thick and muscular for crushing the shells of the freshwater molluscs on which it feeds. The stomach of this trout is more globular than that of most fishes, and endued with sufficient strength to break the shells of small molluscs, but it can scarcely possess any power of grinding as the whole cavity is lined with a fine villous coat.

The grey mullet (*Mugil*) has a stomach that approaches in structure and function very closely the gizzard of a grain-eating bird. This fish has feeble teeth and lives on minute organisms mixed with sand. The second portion of the stomach is globular and thick; the muscular tissue is arranged circularly and equal in thickness throughout, and the stomach has a thick lining.

Hunter came to the conclusion that neither the stomach of the gillaroo trout nor that of the grey mullet can be justly ranked as gizzards; they want "a power and motion fitting for grinding and a horny cuticle." His opinion reminds me of a considered legal judgment on a contentious case. The judge discusses the facts, but does not settle the matter.

It is not easy to frame a definition of a gizzard, and in order to show the difficulty it will be worth while to consider the counterfeit gizzards of crocodiles and oxen.

The Crocodile's Stomach.

In the beginning of winter 1764 Hunter got a crocodile 5 feet long that had been in a show several years before it

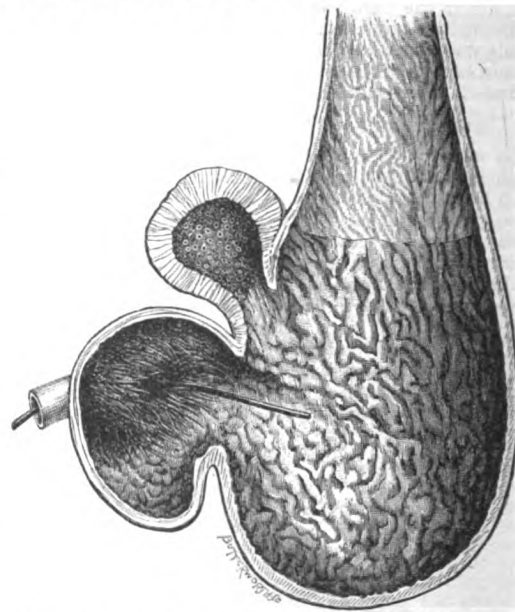


FIG. 4.—Gizzard of a snake-bird, open and showing the hairy strainer in the pyloric bulb. (Museum, Royal College of Surgeons.)

died. At that time crocodiles were rare in London. After making a careful examination of its viscera, he writes: "The crocodile comes nearest to the fowl in the structure of its internal parts of any animal I know. The stomach is of the gizzard kind and has a middle tendon on each side about the breadth of a shilling and all the fleshy fibres pass to it." The stomach of one he had from Jamaica contained the feathers of a bird and a few bones. There were stones in the stomach, some bigger than the end of a man's thumb, and seeds. The Hunterian Museum contains the skeleton of a crocodile shot in the Nile near Silsilis in 1877. The brute, which had been a terror to the natives of a long stretch of the valley, was 16 feet long and reputed to be 80 years old. The stomach contained three hoofs of a sheep or goat, a donkey's hoof, a donkey's bridle, and an ear-ring.

Kermit Roosevelt shot a large crocodile in British East Africa; in its stomach there were sticks, stones, the claw of a cheetah, the hoofs of an impalla, big bones of an eland, and the shell plates of a large river turtle.

A crocodile caught in fishing nets near Khartum lived for seven months in the Zoological Gardens, Cairo. The stomach contained two litres of quartz pebbles, fragments of the hoofs of an ungulate, and piece of water-worn bottle glass. (Shann.) Stones are invariably found in the stomachs of mummified crocodiles. The presence of stones in a stomach does not make it a gizzard, for pebbles are often present in large quantities in the stomachs of seals and sea-lions.

The Omasum of Ruminants.

If the capacity to grind is the first qualification of a gizzard, the nearest approach to one in mammals is that compartment of the complex stomach of ruminants known as the omasum.

The stomach of an ox consists of four compartments. The first is a large receptacle called the rumen; the second is a recess of the rumen and named, from its likeness to honeycomb, the reticulum; this when cleaned is the choicest kind of tripe. The third compartment, the omasum, is a dilatation of the passage between the reticulum and the fourth compartment, the abomasum, or rennet.

The omasum is curious and complex; it is in a full-grown ox of the same shape and as big as a bladder of lard; the walls are thick and muscular, and the mucous membrane is arranged in folds or leaves (Fig. 6); nearly a hundred leaves hang from its dome, stretching from the œsophageal opening to the entrance of the abomasum. These folds vary in width and produce an appearance like that of the flies of a theatre seen from the stage. The folds earned for the omasum the name of manyplies, and psalterium from its likeness to a book. Butchers call it the bible.

The omasum, like the gizzard, is a triturating organ and the details of its structure were described by Ellenberger (1881). The leaves near the entrance are beset with long papillæ resembling the teeth of a harrow, and hinder the reflux of food to the reticulum. Towards the abomasum the papillæ are shorter, closer set, and flattened, like the low elevations



FIG. 6.—Omasum of an ox in transverse section, showing the œsophageal opening and the disposition of the folds.

on a rasp or a file. The covering of the leaves is hard, almost horny, and resistant to dilute solutions of acids, alkalis, and peptic juices. The walls of the omasum

contract powerfully; grass and sodden hay from the rumen pass between the leaves and are thoroughly rasped by the papillæ before entering the abomasum, the true digestive compartment. The larger part of the ruminant's stomach is like a pocket, non-digestive.

The leaves of the omasum are occasionally transfixd by needles and pins. Hunter observed that this was common in cows feeding in the grass of bleaching fields, but he did not realise the gizzard-like action of the omasum.

In culinary art few things are meaner than a gizzard. It is only fit for a dog to eat, but to Hunter it furnished food for thought and became the subject of experiment. It has often happened that observations made on apparently common things in nature have led men to investigate some of the most profound problems of physics, of which life is the most complex manifestation.

POST-MORTEM DIGESTION OF THE STOMACH.

Why does the stomach not digest itself? Many have asked this question. John Hunter about 1772 discovered that the stomach sometimes digests itself after death. His first observation was made on a man who had been killed by one blow of a poker, after taking a hearty supper of cold meat, bread, cheese, and ale. The stomach was dissolved at the cardiac end and a considerable part of its contents lay loose in the general cavity of the belly. The second case occurred in a man who died after receiving a blow on the head which broke his skull. Hunter subsequently found another example in a man who had been hanged.

These observations led him to procure the stomachs of vast quantities of fishes whose deaths are always violent, and they are at the time in perfect health and usually with their stomachs full. In some instances a fish will swallow another fish and a part of it will be in the stomach and a part in the gullet. The part of the fish in the stomach will be dissolved, while the piece in the gullet remains sound. In many of the instances the digesting part of the stomach was itself reduced to the same dissolved state as the digested food. Then it struck him that the stomach, being dead, was no longer capable of resisting digestion.



FIG. 7.—The dory, *Zeus faber*, and the 15-spined stickleback.

Self-digestion of the stomach has been studied by pathologists. Modern experiments prove that gastric juice is only poured into the stomach when the material to be acted upon makes its appearance therein. When a person dies with the stomach empty it may be found several days after death unaltered. If there be food in the stomach and the digestion process in operation when the person dies, then on examining the organ a few hours after death its coats may be found destroyed, allowing the contents of the stomach to escape into the belly.

Animals which Swallow their Prey Alive.

Hunter's observations on post-mortem digestion of the stomach led him to experiment on digestion, and the "pursuit led him into an unbounded field." He discusses the probability of live animals being digested, and at once states, "no fresh proofs are necessary, as we eat oysters every day." This is no proof that they are digested alive.

Snakes sometimes swallow their prey alive. A girl whom I knew kept tame snakes as pets. One day she took a grass-snake and two tree-frogs in a basket to amuse her friends. On opening the basket she could only find one frog and the snake; but a bulge on the snake indicated its position, so she promptly cut off the snake's head and released the frog by a post-mortem celiotomy. The frog survived delivery. Here is another instance. Two boas, companions in the same cage in the Reptile House at the Zoological Gardens, London, seized the same rat at 6 P.M. These snakes were nearly of the same size. At 6 o'clock the following morning only one boa was visible, but the officer in charge saw the tail of a snake sticking out of the mouth of the boa. A keeper seized the tail of one snake; another keeper dragged on the tail of the snake that had been swallowed and gradually released it. An hour after extraction this boa took a rat on its own account and in good style. What would have happened to the incarcerated snake if it had not been delivered is not a matter for surmise: it would have been digested, as the following incident proves:—

Some 20 years ago a Madagascar boa swallowed a boa, its companion boa of nearly the same size, retained, and digested it. Two weeks later I made a search among the pebbles at the bottom of the cage in which the survivor lived and collected some of the vertebrae belonging to the victim. All the soft parts had been thoroughly cleaned in the process of digestion.

I have often thought that live animals, such as fishes, frogs, lizards, and chameleons, when swallowed by storks, bustards, shoebills, or secretary birds, must have an uncomfortable time in stomachs of their captors, and have pictured to myself the agony of being digested alive or slowly ground to death in a gizzard mill. At sunrise I watched some birds fishing in a swamp of the White Nile near Tewfikia. One of the men shot a marabou, and in its stomach I found seven cat-fishes each the size of a sprat. They were dead. The back of each had been broken by the powerful bill of the bird. It is a fair inference that many fishes swallowed by birds are either killed or paralysed before they reach the gizzard.

Fishes do not always kill the prey they swallow. A dory living in an aquarium with a 15-spined stickleback was bold enough, after some consideration, to swallow its spiny companion, and for a few seconds tried hard to bear the tickling; it was beyond his power and he vomited the stickleback, which seemed none the worse for the adventure. In recording this event, Hornell states that when the dory stalks a fish the coloured bands on his sides intensify and darken. The dorsal fin goes up and with a swift dash—the great telescopic mouth is thrown out—and the prey is gulped. (Fig. 7.)

The black mark on the side of the dory is, by fishermen of Roman Catholic countries, regarded as the mark of Peter's thumb when he seized the fish and "opened his mouth" to find the shekel wherewith to pay the tribute. (Matt. xvii. 27.) Those who believe this tale forget that the Sea of Galilee is a freshwater lake and the dory a salt-water fish.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on Feb. 3rd, Sir James Crichton-Browne, M.D., LL.D., F.R.S., treasurer and vice-president, in the chair. The chairman reported a bequest of £300 from the late Dr. T. Lambert Mears, who was a member of the institution for 53 years.

MEDICAL ASPECTS OF AVIATION.¹

By L. E. STAMM, B.A., B.Sc., M.D. LOND., R.A.F.

[AFTER taking a brief survey of the necessary physical qualities to meet the special conditions of stress and strain in the air, Dr. Stamm dealt with the mental qualities in more detail.]

Conscious Control of the Muscles.

We must first refer to the nerve mechanisms which subserve the mental functions. We have, in the first place, the sense organs of sight, hearing, and touch, also the muscular sense and sense of equilibrium. It is most essential that each one of these senses should function in a normal manner, and they are all tested in the course of medical examination.

In regard to the motor mechanism, it is important that the muscles show good tone and a power of nice control and adjustment. Deficiency in this respect is usually characterised by the pilot instructor as "heavy on controls." Such natural inherent clumsiness is a bad quality in a pilot, and means have been devised to test for this on the ground; but there is another deficiency which has not received much attention, but which I think is of some importance, and that is "conscious control of the muscles." A Mr. Matthias Alexander has developed the subject, and is disposed to ascribe all the ills of humanity to this lack of "conscious control." It is a fact, although it would be a surprise to most to learn it, that very few people have full conscious control of their muscles, and it can be demonstrated in this way: If a person is told to move a limb in any direction he will do so, but if he be told to relax the muscles of any limb so that you can move it in any direction he will probably not be able to do so, and the more you ask him to try to relax them the more rigid will the muscles become, while assuring you all the time that they are relaxed.

This inability to relax or inhibit muscular contraction shows a lack of conscious control of the motor mechanism, and is a factor of some importance for the pilot. It shows a lack of complete rapport between the muscles and the brain nerve centres that should control them. There is a great difference between individuals in this conscious control or lack of it. It is quite simple to test. The person is instructed to lie down on the floor and relax all the muscles of his limbs. One of the limbs is gently raised and then let go. If the limb is really relaxed it will, of course, drop at once, as if lifeless. If, however, as is often the case, the muscles are not relaxed, the limb remains in the air in the position to which it was raised. Some are so convinced that the muscles are relaxed that the limb remains in the air without its possessor realising the absurdity of the situation. Apart from the importance of the general principle of perfect rapport between brain and muscles, this unconscious rigidity may be responsible for a serious condition of things in the air in the course of training, as when a pupil loses his head and hangs on like grim death to the joy-stick, making it difficult or even impossible for the instructor to take proper control.

In my medical inspections of pupils at the aerodrome I used to test for this ability to relax and give directions for practice to obtain a proper control of the muscles and to be able to relax at will. I would suggest that some such instruction should be embodied in the ordinary physical training.

Mental Qualities.

In ordinary flying a pilot of any experience controls his machine automatically—that is to say, his sensations of sight, hearing, and touch giving him the necessary information about his machine are transmitted to the nerve centres, and the consequent muscular movements are carried out without any interference or control from the higher centres. But in the air circumstances are continually occurring calling for the exercise of the higher centres connected with decision, discrimination, judgment, in the most rapid and definite manner. At certain times rapid action following quick and right judgment decides his fate. Above all things, one requires for a good pilot a mental constitution that has the capacity to take in all the circumstances of a situation

¹ A paper read before the Royal Aeronautical Society at the Royal Society of Arts on Jan. 15th, 1919.

quickly and correctly and make a rapid and correct decision. When the engine conks the experienced pilot automatically puts the nose of the machine down and looks to his pressure gauge, and with his conscious mind looks around and takes in the conditions before him for a forced landing, and decides upon his course of action. For the inexperienced pilot some of the necessary actions, such as observation of pressure gauge, may not be automatic, so that there is still more to occupy the conscious mind.

For all this one requires not only a quick and accurate coördination between the senses and the muscles, but also between these and the higher mental functions.

A quick coordination between the senses and the muscles can be tested by taking the "simple reaction time," that is the interval of time that elapses between a person receiving a signal, either visual, auditory, or tactile, and his response to the signal, in the form of some movement, such as pressing an electric key. In my opinion, testing for this "simple reaction time" is of little or no practical value for the Air Service, because in healthy young men with normal senses and muscles the coordination between these and, therefore, the "reaction time" is sufficiently quick and accurate for all practical purposes, and in actual experience I have obtained some comparatively slow reactions from very capable individuals and very quick responses from some of poor mentality. In candidates for the Air Service I do not think these simple reaction time tests would eliminate 1 per cent. of undesirable.

What one requires to test is the ability of the candidate to respond quickly and accurately under conditions in which the higher *conscious* mental functions of discrimination, decision, and judgment are involved. For this purpose one has a number of different signals, requiring different responses, the candidate not knowing which signal to expect. This necessitates the intervention of the conscious mind between the perception of the signal and the motor response, and consequently the reaction time is lengthened. The mental ability is tested by the rapidity and accuracy of response in proportion to the complexity of the problem presented to the candidate.

Many forms of apparatus have been devised, but as the interval of time is only a fraction of a second and variations are measured in 1/100ths of a second some difficulty has been found in obtaining accurate and reliable apparatus that is also sufficiently simple for practical purposes. With the help of Major Burgess, engineer, R.A.F., I have devised an apparatus which is comparatively simple and which in practice has proved of value in testing candidates for the Air Service. A diagram of the apparatus is shown.

Reaction Time Apparatus.

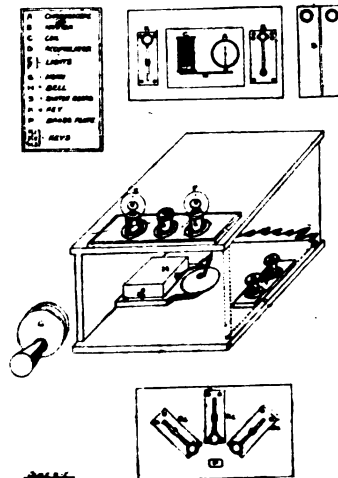
It consists of a chronoscope, *A*, which registers to 1/100th second, and is worked electrically by a hammer, *B*, from a coil, *C*, and accumulators, *D*. There are four signals, two differently coloured lights, *E* and *F*, an electric horn, *G*, and an electric bell, *H*. The operator has a switchboard, *S*, by which any one of the signals is put in the current, and the signal is given by touching the key, *K*. The candidate sits opposite the operator and places his right-hand first finger on the brass plate, *P*, which is equivalent from the three keys, *K*₁, *K*₂, *K*₃. The end keys, *K*₁ and *K*₃, are for the corresponding lights, and the middle key, *K*₂, is for the horn or the bell. It was not considered desirable to complicate things to the extent of four keys.

When the operator presses his key, K , one of the signals is given, and at the same time the chronoscope starts. The candidate responds by touching the appropriate key, K_1 , K_2 , or K_3 , which stops the chronoscope, and the reaction time is read off in 1/100th seconds.

The method of examination is as follows. After a short preliminary rehearsal to acquaint the candidate with the method of working the apparatus, the candidate is tested for the simple "automatic reaction time" by one signal, which he knows beforehand. He is tested in this way by a series of each of the four signals. As already stated, I set no value on these tests, but they enable the candidate to get used to the apparatus. After testing for the simple reaction time with each separate signal the candidate is now told that he may get either one of the two lights, and he is to respond by touching the appropriate keys, K_1 or K_2 . Having done a series of ten with the two light signals, he is now given a series with three possible signals, the two lights and the horn, and finally a series of all four signals—two lights, horn and bell—but for the bell for which he has previously used the middle key, K_3 , he is now told to keep his finger on the brass plate. This involves mental inhibition. Each

series shows an increase in the reaction time, owing to the increased complexity of the problem before the candidate. Recently I have used a further series of four signals, in which the keys previously used for the lights, each corresponding to the light on the same side, are now reversed. This further complicates the problem and causes a further increase in the reaction time.

Diagrammatic Representation of the Reaction Time Apparatus.



The following are (1) the averages of 150 cases, including pupils and instructors (good pilots) and (2) of 20 instructors (experienced pilots), for the different tests in 1/100th seconds. The latter yield, as would be expected, appreciably lower figures:—

| | | |
|---|--------|------------|
| (1) Simple visual reaction (one signal) | | (28 ... 27 |
| (2) " auditory " | " .. . | " .. 25 |
| (3) Two signal test (two lights) | " .. . | " .. 35 |
| (4) Three " (two lights and horn) | " .. . | " .. 38 |
| (5) Four " (two lights and two sound signals) | " .. . | " .. 44 |
| (6) " (with keys to lights crossed) | " .. . | " .. 48 |

Taking the last two tests as the crucial tests of the mentality of the pupil, I have found a remarkable correspondence between the results and their capacities as flying pupils. Having tested a certain batch of pupils, I send the names to their instructors and ask for their opinion as to their flying capacities and possibilities of making good pilots. Arranging them in the order of the results from the machine, as a general rule the top names have "very good" or "good" against them, the middle ones "fair" or "average," and the bottom ones "poor" and probably "turned down" or sent to "heavier machines."

Appended is a list of pupils examined, with the results of the test and the criticisms of their instructors, from which the value of the test can in some measure be estimated.

I should point out that with my apparatus there is a muscular adjustment involved in the movement of the fingers to the different keys. In my opinion this is a valuable factor as a further test to the nerve mechanism, but it necessarily prolongs the reaction time, so that even the simple reaction time with my apparatus is longer than the usual without such muscular adjustment. It is quite easy to dispense with this for simple reaction to one signal by placing the finger ready on the key.

The Value of the Tests.

The value of the tests lies in the fact that they involve considerable adjustment and coordination between the senses and the muscles and at the same time call for a rapid and accurate working of the higher mental functions of conscious discrimination and decision, a complexity of conditions similar to that involved in piloting an aeroplane. Moreover, it calls for a prolonged effort of attention, and the ability to sustain the effort is shown by the way in which the candidate succeeds in keeping up his rate of response to the end of the tests or shows evidence of mental fatigue by sudden lengthening of the time intervals or by mistakes in the keys.

Table showing the Results of the Test, together with the Remarks of M.O. and Instructor.

| FLIGHT GROUP No. I. | | |
|----------------------|----------------------------|---|
| No. | 4-signal test in 1/10 sec. | Remarks of M.O. Instructor's remarks. |
| 1 | 31 | Haphazard, W. 7. Good, lacks judgment. |
| 2 | 35 | Very intelligent and quick. Very good—now instructor. |
| 3 | 35.5 | * 120. Nervy, guts mentally. Fair—nervy, drinks too much. |
| 4 | 36 | Sturdy, sports, W. 3. Good but slow. |
| 5 | 38 | Sturdy Canadian, horse-riding. Good, quick, guts. |
| 6 | 39.5 | Average. |
| 7 | 39.5 | All there—guts. Good—plenty of guts. |
| 8 | 39.5 | Says up-et by 3 instructors. Poor, no guts, gets sick. |
| 9 | 40 | No nerve physique. Average. |
| 10 | 41 | — Very good; steady. |
| 11 | 42 | — Good. |
| 12 | 42 | Capable, good type. Extra good. |
| 13 | 42 | Average. |
| 14 | 42 | Alert, good type. Very good—now instructor. |
| 15 | 42 | — Average, just started flying. |
| 16 | 43 | Intelligent. Good. |
| 17 | 43.5 | Sports, average intelligence. Fair—guts. |
| 18 | 44 | — Average. |
| 19 | 44.5 | Uptake slow. Good but silly. |
| 20 | 44.5 | Lethargic. Slow but solid. |
| 21 | 46 | Dumpy. Average, slow. |
| 22 | 46 | Musical, nervy. Fair. |
| 23 | 46 | Slow uptake, no sports, clerk. Average. |
| 24 | 47 | slow uptake, no sports, clerk. Average, slow learning. |
| 25 | 47 | Mert—sports. Good. |
| 26 | 47 | Nervy. Poor—windy. |
| 27 | 47.5 | Very anxious, W. 4. Average, persevering. |
| 28 | 48 | — Poor, sent to heavier machines. |
| 29 | 49 | Windy, paralysed by horn signal, bad type. Poor—windy. |
| 30 | 50 | — Average, large flying experience. |
| 31 | 50.5 | Bank clerk, not robust. Average. |
| 32 | 50.5 | Bright; guts. Good—lots of guts. |
| 33 | 50.5 | — Poor. ? Windy. To be turned down. |
| 34 | 52 | Slow but good type. Slow, but will make good. |
| 35 | 52 | — Fair. |
| 36 | 52 | Sturdy—rough and ready. Fair—solid—heavy-handed. |
| 37 | 52.5 | Slow and dull. Average to poor. |
| 38 | 53 | Nervy, sick on stunting. Poor. |
| 39 | 55 | Heavy—dull. Poor, sent to heavier machines. |
| 40 | 55.5 | Dull and windy. Poor, sent to heavier machines. |
| 41 | 57 | — Poor. |
| 42 | 75.5 | Mentality very poor. Hopeless. |
| FLIGHT GROUP No. II. | | |
| 43 | 33 | Journalist, M.A. Alert, no sport. Good: previous flying experience. |
| 44 | 36.5 | Average. Good. |
| 45 | 37 | Good type. Very good. |
| 46 | 37.5 | — Good—guts—keen. |
| 47 | 39 | Good type, Canadian. Very good. |
| 48 | 40 | Good type. Good. |
| 49 | 40 | Average. Good. |
| 50 | 40 | Quick but bumptious and over-confident. Good but objectionable. |
| 51 | 40.5 | Average. |
| 52 | 40.5 | Heavy Scotch type—guts. Average, perseveres. |
| 53 | 41 | Good type. Very good—now instructor. |
| 54 | 41 | — Good. |
| 55 | 41.5 | Average. Good, slow learning. |
| 56 | 41.5 | Bright and intelligent; guts. Very good and keen. |
| 57 | 41.5 | Accountant; lethargic, heavy. Heavy handed; to be turned down. |
| 58 | 41.5 | Lack of muscular adjustment. Poor and slow. |
| 59 | 42 | Good type—sport. Very good, steady and keen. |
| 60 | 43 | ? Windy. Good but windy. |
| 61 | 43 | — Average, rather slow. |
| 62 | 43 | M.C. Good but slow learning. |
| 63 | 43.5 | Heavy. Good but slow learning. |
| 64 | 44 | — Keen, lacks judgment, windy. |
| 65 | 44.5 | Nervous temperament, not windy. Average, keen, guts. |
| 66 | 44.5 | Sports, horse-riding. Average, keen, guts. |
| 67 | 45.5 | — Average but slow. |
| 68 | 46 | Good type. Good. |
| 69 | 46.5 | Good type, Canadian. Good. |
| 70 | 47 | Average. Good and very keen. |
| 71 | 47 | — Average to poor. |
| 72 | 48 | Little stamina, clerk. Average. |
| 73 | 48 | Average—no sports. Average. |
| 74 | 48 | M.C., slow. Good guts—slow learning. |
| 75 | 52.5 | P. 96. Tremors, ? windy. Average—windy. |
| 76 | 49.5 | Average. Slow—improving. |
| 77 | 50.5 | Nervy. Poor—windy. |
| 78 | 51 | Sports. Poor but guts. |
| 79 | 53 | M.C., not good type. Very slow; to be sent to heavier machines. |
| 80 | 53.5 | — Average. |
| 81 | 54.5 | M.C., heavy. W. 5. Hopeless, turned down. |
| 82 | 54.5 | M.C., heavy. Poor—very slow. |
| 83 | 54.5 | M.A., right. W. 4. Average. |
| 84 | 56 | Slow and dull. Very poor—turned down. |
| 85 | 57 | Windy—bad type. Poor—heavy handed. |
| 86 | 58 | Heavy—sports. Average—guts. |
| 87 | 58 | M.C. but guts, drinks too much. Average—guts. |
| 88 | 61 | — Poor. |
| 89 | 66 | Civil Service clerk. Poor—slow. |

FLIGHT GROUP No. III.

| No. | 4-signal test in 1/100 sec. | Remarks of M.O. | Instructor's remarks. |
|-----|-----------------------------|---------------------------------------|-----------------------------|
| 90 | 34 | Alert—bright. | Very good. |
| 91 | 35 | Average | Average, not keen. |
| 92 | 38 | Canadian, good type, sports. | Very good. |
| 93 | 38 | Good type. | Very good. |
| 94 | 38 | — | Average. |
| 95 | 39 | M.A. Good type. | Very good—now instructor. |
| 96 | 40 | M.A. Rather slow in uptake. | Very good. |
| 97 | 40 | — | Poor—inattention. |
| 98 | 40 | M.A. Alert. | Good. |
| 99 | 42 | Good type—sports. | Very good. |
| 100 | 42 | Windy. | Intelligent, but no guts. |
| 101 | 42 | Artistic. M.A. | Good. |
| 102 | 43 | — | Good. |
| 103 | 43 | — | Good. |
| 104 | 43 | — | Good. |
| 105 | 43 | — | Fair, lacks confidence. |
| 106 | 45 | Good type—bright. | Good. |
| 107 | 45 | No physique—windy. | Poor, windy and sick. |
| 108 | 45 | — | Average to good. |
| 109 | 45 | Alert and bright, good physique. | Average to good. |
| 110 | 46 | Rough type. | Average to good. |
| 111 | 46 | — | Good. |
| 112 | 46 | Canadian, rather stolid—guts. | Good. |
| 113 | 47 | Canadian, sports, M.A. | Good, but very slow. |
| 114 | 47 | stolid, but guts. | Good—guts. |
| 115 | 47 | Russian, intelligent. | Average. |
| 116 | 48 | — | Average. |
| 117 | 48 | — | Average. |
| 118 | 48 | Alert—guts. | Average. |
| 119 | 50 | M.B. Slow in uptake. | Average. |
| 120 | 50 | — | Average. |
| 121 | 50 | Slow—stolid. | Good, guts. |
| 122 | 50 | — | Poor. |
| 123 | 52 | Too talkative and plausible, windy. | Average—windy. |
| 124 | 52 | Bright and intelligent. | Average. |
| 125 | 52 | — | Average. |
| 126 | 52 | — | Average. |
| 127 | 52 | Good type Canadian, sports. | Average. |
| 128 | 53 | — | Average. |
| 129 | 54 | — | Poor. |
| 130 | 54 | M.C. | Average to poor. |
| 131 | 54 | M.C., heavy. | Poor. |
| 132 | 55 | — | Poor. |
| 133 | 56 | Haphazard, M.C. | Average. |
| 134 | 56 | Rather heavy but good type. | Average slow but solid. |
| 135 | 56 | Feeble mentally & physically. | Average to poor. |
| 136 | 63 | Poor type. | Average to poor. |
| 137 | 63 | — | Average. |
| 138 | 66 | Slow but sturdy, horse-riding. | Average to poor, very slow. |
| 139 | 68 | Charterhouse School, but slow, heavy. | Poor—very slow. |

W. = mistakes in keys. M. = mentality. A, good. B, average. O, poor. Where not stated mentality is average.

Over and above everything else there is the "will" factor to be taken into account. This may act in at least two different ways. It may be negative. Then the results of the tests will not represent the best that the candidate can do. Or it may be very positive. It may be exercised to such an extent that the candidate exceeds for a time his normal power of reaction. In this case the excess of his efforts usually shows itself by mental fatigue setting in before the tests are finished, and he is unable to keep up the pace he has set for himself. All these variations are very useful to observe in forming an estimate of the candidate's mental constitution and capacity.

I would, in fact, claim for the apparatus that it not only gives figures of some value for estimating the mental capacity of a candidate for aviation, but that it affords a means of employing a candidate in a way which gives considerable opportunity of making mental notes in regard to his intelligence and personality, by the manner in which he tackles the machine. Some tumble to the game at once and show a remarkably quick adaptability, whereas others are equally slow in picking up the idea, but may warm up as one proceeds and give quite a good account of themselves in the final tests. Some are light in touch and accurate; others heavy and clumsy, so that they often miss the keys and almost break them when they touch them. I have myself been surprised in dealing with pilots personally known to me to observe how the machine seems to bring out and record their personality, and especially their flying personality. There appear to be two good but different types of mentality which react differently to the apparatus. In the one the reaction times are very quick, but in cutting down the time allowed for discrimination to the utmost in the final tests several mistakes may be made. In the other good type the

reaction times are appreciably longer, perhaps even above the average, but the signals are responded to with absolute accuracy. The flashy, crack scout pilot shows the first type of reaction, while the steady careful pilot is characterised by the second type of reaction.

Any flying man may say, "These tests may be very good, but even if a man has ever such quick discrimination and judgment he is no use as a pilot unless he has guts." This brings us to the second important mental factor—the emotional.

Emotional Stability.

We can distinguish two extreme types—one in which disturbance of these centres, by some emotion, whether that of fear, anger, sorrow, or joy, causes a most profound effect upon the rest of the nervous system, resulting in rapid heart action and other disturbances of the circulatory system, rapid respiration or temporary stoppage of same, tremors of the muscles, and an upset of the digestive system; and all this bodily disturbance may be accompanied by an inhibitory effect upon the higher nerve centres, so that the processes of thought, judgment, discrimination, and action are paralysed. In such a type it does not matter a straw whether under normal conditions the individual can think, decide, and act quickly or slowly, because when he is emotionally disturbed by, say, impending danger his mental processes are paralysed and his bodily functions are so disorganised that his machinery is out of control. In the other type the emotional centres are so stable that no such disturbances to the rest of the machinery take place, even under the most trying conditions. There may be, and almost certainly is, some activity of these emotional centres set up, but this results in a stimulation of the rest of the mechanism, so that his powers of thought and action are actually increased.

One has here a striking analogy between the effect of the emotional centres upon the rest of the nervous system and that of drugs; all drugs such as alcohol, opium, and the anaesthetics that have the power of affecting specially the nervous system first stimulate it to greater activity and then paralyse it. If the dose is small the effect is chiefly that of stimulation, and the period of stimulation may be of some duration, but if it be large the period of stimulation is very short or non-existent, and the chief effect is that of paralysis. The difference in emotional effect is again exemplified in artistic performers. In some the emotional disturbance of fear is so great that they are unable to perform in public. In others the emotion serves as a stimulus to help them to do their best.

It is obvious that the individual who is liable to such serious emotional disturbances or, in the language of the Service, liable to get the "wind up," is constitutionally unfitted for work in the air. And here I would point out that such a person is not necessarily a coward in the ordinary acceptance of the term. The condition is constitutional. He may have the mental "guts," the will-power to force himself to incur any risks. He may have proved himself an excellent infantry officer and go into the Air Service with all the desire and determination to win laurels by bringing down Huns in the air, but when he finds himself in the position of danger that he has voluntarily incurred he is handicapped by these emotional disturbances and is not likely to do the best for himself.

Tests for the Emotional Factor.

There are, of course, many intermediary conditions between the extreme types I have depicted, with a certain average, but it is most important that we should be able to eliminate at least individuals in whom the tendency to severe emotional disturbance is likely to manifest itself. Various tests have been devised, the principle of which consists in trying to arouse the emotion of fear by some sudden and alarming noise, such as a pistol shot, and testing the bodily reactions, such as increased heart action, muscular tremors, &c. The artificiality of the conditions somewhat vitiates the results.

I have found that the pulse-rate under ordinary medical examination is a very fair guide to detect the "windy" type. People who manifest their uneasiness at coming before a doctor for examination by a rapid pulse, which does not settle down in spite of every effort to put them at their ease, prove by that fact that there is a lack of control of the nerve mechanism of the vital centres, that there is an instability and liability to serious disturbances by the emotion

of fear, and they belong to the "windy" type. This instability does not appear to be in the vital centres themselves, but in the higher nerve centres controlling them, because such individuals respond to the ordinary physical test in a normal manner. The manometer test, the exercise test, show a perfectly normal acting mechanism; it is the rapid pulse of emotional disturbance.

Then there is a typical facial expression which one gets well acquainted with in carrying on this work. It consists in a furtive, apprehensive look, as if always expecting something unpleasant to happen, with a certain look of indecision and uncertainty, in marked contrast to the straight, direct, decided expression of the crack fighting pilot. One cannot say that an amount of "windiness" above the normal may not be present without this obvious expression, but when it is well marked I should have no hesitation in throwing its possessor out as undesirable for the Air Service.

It has been found that the bodily expression of an emotion owing to the disturbances in the circulatory system causes a deflection of a sensitive galvanometer proportional to the disturbance, so that this would appear to offer a means of comparing the extent of emotional instability in different persons. The chief difficulty lies in artificially producing the conditions necessary for calling forth the emotion. To some extent my apparatus is a test of an emotionally nervous instability, because in a highly nervous person the ideal of being examined in this way tends to set a condition of stage fright, and I have had cases in which the startling noise of the horn has shown a paralysing effect by causing a pronounced lengthening of the reaction time to this signal as compared with the other signals. But the apparatus is by no means a satisfactory test for the emotional factor, for in actual practice this emotional factor has been the chief disturbing influence in the results of these tests; pupils giving good results with the apparatus may be marked "poor" by the instructor because they are "windy," and others showing long reaction times may be marked "good" by their instructor because they have "guts"! Very frequently, however, I have also detected these qualities by the tests I have referred to and made notes to the same effect.

Essential Mental Qualities for Aviation.

We have, then, these two chief mental qualities—quick, accurate judgment and an emotional stability or "guts," or, to use the term in a general sense, "confidence." Now, although instructors lay so much stress upon the "guts" of a pupil, disregarding to some extent the intelligent factor and judgment, in my opinion one requires a nice balance between the two. Crashes occur from two chief causes: (1) "wind up" or "losing one's head," due to loss of control from emotional disturbance of fear in the manner already described; (2) over-confidence in an intelligence or judgment which is below the average and which therefore does not justify the confidence.

The one condition is quite as responsible for disasters as the other. I have cases on record that have given poor results with my apparatus, and of whom I have formed an adverse opinion on account of lack of intelligence on general grounds, education, &c., but who have been marked "good" by the instructor because they have "lots of guts." The verdict of my apparatus has been in the end justified, because the inevitable crash has come. Above all things it is necessary that a man should know his own limitations as well as those of his machine.

It must be admitted that when we have picked out these two important factors of "judgment" and "confidence" and applied our tests for them we have not exhausted the whole subject of mentality. There still remains the general temperament and mental constitution, though these are largely made up of varying degrees of these two functions. We have in any case no further tests, physical or otherwise, that we can apply to discriminate between the various types.

This power of judgment and quick decision does not appear to involve the highest intellectual functions of the mind; it is rather on a par with what we call "tact" in ordinary life. It is the power quickly to take in all the circumstances of a given position and react to it in the best manner—to do the right thing instead of the wrong with quick decision. There is a certain type of highly intellectual person who would by no means take first prize at the tests with my apparatus, but also he would not make a good pilot.

While one may in this way pick out special mental characteristics essential for the successful aviator and exclude anyone specially deficient in any one of them from air service, one must at the same time recognise that there is an infinite variety in the temperaments and mental constitutions of men, and that therefore no hard-and-fast line can be drawn. Just as there are many types of aeroplanes, each more or less useful for a particular purpose and in each of which the designer has had to compromise between the lift and the drift or the speed and the climb, so the pilot of cool judgment, though somewhat slow and deliberate in action, is suited for one service, while the quick, high-spirited, though somewhat emotional, erratic type may be chosen for another, such as the fighting scout. In both cases they may be a compromise in comparison with the ideal pilot.

Aviation requires, above all things, a strong, tough nervous system that can withstand all the stresses and strains, both mental and physical, in the air, that controls well the vital organs, reacts to external conditions quickly and accurately, and is not affected detrimentally by emotional disturbances. Just as one uses the term "physique" to the general development of the body and one speaks of good or bad "physique," so I would suggest the expression "nerve physique" to describe the general tone of the nervous system. There is a general consensus of opinion that a good "nerve physique" is found in young men who have led an outdoor life. Outdoor pursuits not only tend to develop such a nerve physique, but also offer in many ways the best training for aviation by developing their power of observation and quick response, as in the case of riding, shooting, hunting, and, though perhaps in a less degree, almost any sport.

The Fighting Spirit.

It has been suggested that the best type of fighting scout must possess the fighting spirit and be capable of developing the emotion of anger with his foe—in other words, must be able "to see red." With this I disagree. In conformity with what I have already said in regard to the emotions, it is my firm conviction that a pilot requires to be as free as possible from any emotional disturbance, whether of fear or anger, and that if he "sees red" his judgment is liable to be clouded and faulty. I must admit that this is to some extent an armchair opinion, but I have sat in a machine taking part in a scrap many times, and I think I have sufficient imagination to fill in the rest of the picture; and as it appears to me, the fighting scout requires the hunting instinct, with all the judgment, cunning, and zest to down his prey, rather than the fighting spirit of "seeing red." It is the man who goes forth in this spirit, aggressive but cool, that is most likely to carry through those nice turns and twists in the right direction and at the right moment that seal the fate of his adversary and render him the victory.

Alcohol and Tobacco.

Then there is the much-voiced question of alcohol and tobacco. From what I have already said it will be obvious that it is not only necessary for the pilot to possess a good nerve physique, but to keep it up to pitch, and any excess reacts deleteriously upon the nervous system more than on any other part of the body, more especially excesses in drugs such as alcohol and tobacco. Nothing will better contribute to the restriction of these than the ample provision of facilities for out-of-door sports. More especially I would plead for the provision of horse-riding, both for pilots and pupils under instruction. Horse-riding is one of the best physical exercises, and probably comes nearer to controlling an aeroplane than any other ground occupation. I would suggest that every aerodrome should have its stables as well as its hangars, and what better place than an aerodrome for polo? Furthermore, there is a much greater inclination to indulgence as a means of combating conditions of stress or "staleness" from long service. In my opinion no one should be engaged in continual flying, whether as instructor, ferry pilot, or on active service, for more than three months without a complete rest of at least a couple of weeks.

WATER-SUPPLY OF KARACHI.—The President of the Karachi municipality states that ample supplies of water are now available and that the new wells provide a reserve of supply up to twice the consumption even of the period immediately preceding the monsoon.

SOME SIMPLE TESTS OF PHYSICAL EFFICIENCY.¹

By MARTIN FLACK, C.B.E., M.B., B.Ch. Oxon.,
LIEUTENANT-COLONEL, R.A.F.M.S.

I WISH to bring to notice some quite simple tests which I believe will be of use in determining the physical efficiency of an individual. I am approaching this problem from the point of view of a physiologist, and the tests have been devised to show the physical condition, not particularly of any one system, but rather of the individual as a whole.

The procedure has been to select for examination, as far as possible, healthy controls. In this connexion officers of the R.A.F., who have made good and who have been chosen by their commanding officers for their efficiency in flying and in fighting, have been examined and standards have been set, provisionally of course, and may have to be altered. On the other hand, a number of officers who have broken down for some reason or other have also been examined, and the results obtained compared with these healthy controls.

I would like to emphasise that these tests are not designed to supplant the work of the clinician in any way, and when a man is reported as physically unfit on these tests it does not mean that the work of the physician is finished, but that it is beginning. If the subject does not come up to the standards on being overhauled by the applied physiologist, then the psychologist, neurologist, cardiologist, or general physician will find something is wrong with him. These tests give indications for such overhaul.

The chief point in connexion with these tests is the technique. This is important because, if adopted, it is essential that all the tests be carried out in the same way on all occasions, so that various medical officers may apply them to the same individual at different times. It has been suggested in regard to the care of officers in the R.A.F. that preventive treatment is best. If officers were periodically subjected to these tests by medical officers at different stations they would carry with them a certain definite amount of information as to their physical condition at the time of the various examinations.

Description of Tests.

The first test is the *response of the pulse to exercise*.

It is of importance the way this is done. I would point out that there is no limit to the number of times a man may be asked to stand upon a chair, but the technique here suggested is suitable to the examination of a large number of subjects. The test is that a man shall lift his body weight through a definite height five times in 15 seconds. The rate of increase in the pulse as a result of the exercise is noted and the rate of return to the normal, the pulse having been taken standing immediately before the exercise. In this way uniformity of observation is obtained. Hitherto, if ten medical officers were examining candidates, some might order the candidates to touch their toes four times: the enthusiastic man would do so in 5 seconds, the lethargic man in 20 seconds. The test as devised is an effort to set a level basis for all candidates. Preferably the sitting rate of the pulse is first taken. The pulse-rate is then taken standing. If the rate is unsteady it should be counted in periods of 5 seconds until a steady rate is obtained.

The candidate is then put through a regulated exercise, which should be carried out as follows: Standing before a chair, he places one foot upon the seat of the chair and steadily raises his whole body to the height of the seat five times in 15 seconds, one foot being retained on the chair throughout. The examiner should regulate the speed and rhythm in the following way: Standing beside the candidate, holding the wrist, with his fingers on the pulse, the examiner swings the arm forward and backward to indicate the time of raising and lowering the body.

The subject still standing, the examiner then counts the pulse in 5-second intervals, and notes the acceleration and the time taken to return to the previous rate. In a good subject the increase of rate is about 20 and the time of return to normal 15-25 seconds. If the time of return exceeds 30 seconds it is suggestive of cardio-vascular inefficiency.

The breath-holding test.—Test No. 2 is quite simple, and consists in getting the subject to hold his breath without any preliminary deep breaths.

¹ A synopsis of a paper read before the Epidemiology and State Medicine Section of the Royal Society of Medicine on Jan. 10th, 1919.

I would insist upon the actual lines on which the test is laid down being followed: A deep expiration followed by the filling of the lungs, clipping the nose, holding the breath as long as possible. The significance of the test should not be mentioned to the subject. He should just be told to breathe out and breathe in as far as possible and then to hold the breath. At the end of the test the question should be asked as to what are the sensations experienced by the subject during the holding of the breath.

The test was originally designed to show whether there was oxygen want, and I still believe the test does show the subject who would suffer from oxygen want. From my experience I found that people who were likely to suffer from "oxygen want" would give up after a very short time in holding the breath and would almost invariably return an abnormal answer. A normal answer would be that the subject "had to give up," "felt he would burst," an abnormal answer that the "blood rushed to the head," "things became blurred," &c. The test, however, has other significance. The man without resolution, for example, will give up early.

As originally shown by Dr. Leonard Hill and myself, if a man who had held his breath in this manner then takes a lungful of oxygen instead of a lungful of air, the time of holding the breath will be increased from $1\frac{1}{2}$ to $2\frac{1}{2}$ times as long. Therefore what one breaks down from is, in the first case, oxygen want, because when one breaks down in holding the breath on oxygen the symptoms are quite different, and are those due to CO_2 excess—headache, sweating, &c.

Another interesting point in this connexion is this: It is known that the power to hold the breath is greatly diminished at altitudes. Therefore a man who can hold his breath a long time at ground level without discomfort has greater room for diminution in his power to hold his breath than a man who can hold his breath a short time at ground level before discomfort occurs. An efficient man at altitudes is a deep breather, whereas the man who is inefficient is a panter. Figures in regard to holding the breath were worked out in the first instance on 40 successful pilots, all picked out by squadron commanders, or by the Admiralty, or the R.F.C. as being quite able. The time the breath is held averages about 69 seconds and the sensations experienced normal. The vital capacity averages at 3800 c.cm., with a minimum of 3400 c.cm. in efficient fliers. In a number who were sent up for medical boarding the breath was held for not more than 45 seconds, usually much under, and in most cases the answers recorded were not normal.

The deduction, then, is that the breath-holding test on an individual would be an idea as to whether he was likely to do well in the air. As the results appeared to show that poor breath-holders could not last in the air, the breath-holding test was adopted at the R.A.F. Commissions Board. In my opinion it is preventing people going into the Air Force who would not do well. The question of "oxygen want" is a matter for serious future research, and in peace-time one will be able to do such research on a more scientific basis.

The third test is a combination of the first two tests.

Having got the pulse response to exercise and the time of the breath holding test, then the time the breath can be held after exercise can be taken. In the unfit the breath-holding power comes right down, probably by 30 seconds. The fit man may possibly hold his breath almost as long as before, but will not have a fall of more than 20 seconds. The man out of condition gives a big fall in time after exercise.

The standard for admission for the ordinary breath-holding test was set at 45 seconds. Under 45 seconds should cause the subject to be looked upon with suspicion, and probably graded in regard to the height to which he should go.

The vital capacity of pilots—The minimum in the table of successful flying officers is 3400 c.cm.

I suggest that the use of a modified gas-meter is the best way of measuring vital capacity, and preferably one made by an English firm; this has the great advantage over the German model, from which it was copied, that its capacity cannot easily be overshoot. Among officers who had broken down a great number of those tested were under the minimum of 3400 c.cm., but it was subsequently found that this was due to flying stress, some having a vital capacity of only 2800 c.cm.

Captain H. C. Bazett, M.C., R.A.F.M.S., has shown that in addition to these tests, if the respiration-rate is multiplied by the ventilation per minute and divided by the vital capacity, it is a very good indication of the power of a pilot to fly. A figure below 30 is good, a figure above 30 poor. A test like this will be of value for the selection of the high flier.

U tube tests.—The apparatus for the next test I wish to describe is a U tube manometer filled with mercury, with the scale moveable.

The test is a measure of the tone of the abdominal wall. The subject is asked to blow up steadily the mercury column as high as possible. The number of mm. Hg blown is recorded. If for any reason it is suspected that the subject is not trying, he is asked to try again with the scale of the manometer turned away. There should be but little difference from the previous reading, and in such a case encouragement may cause the subject easily to surpass his previous effort. He is then asked to try again while looking at the column. If he is not trying he will surpass his first effort, which he saw.

The sixth test is another test with the U tube manometer. This test is performed as follows:—

The subject is asked to empty the lungs, fill up, blow the mercury to the height of 40 mm. and hold it there, without breathing, for as long as possible. The nose should be clipped. A valuable adjunct to this test is the behaviour of the pulse during the time the mercury is being sustained. It is counted during each period of 5 seconds that the mercury is sustained. Starting at the 5th second in the normal individual there is generally a slow, steady rise in the rate of the pulse or a fairly marked rise which is sustained most of the time. For example, the pulse-rate may rise gradually from 72 to 96 or 108, according to the time the breath is held, or it may rise at once from 72 to 96 or 108 and be sustained there. A large rise in rate—e.g., from 72 to 132 or 144—is unsatisfactory. In cases of flying stress a characteristic response is for the pulse to jump up to a quick rate during the 5th to the 10th or 15th second and then to fall away in rate to normal or even below. Such a response is as follows:—

Normal at start, 84; 5th–10th second, 144 (sometimes almost impalpable); falling away (say 20–25 seconds) to 72 or even 60. Such cardiomotor instability is frequently associated with flying stress and is indicative of a need of rest. In any case the subject is generally not in a condition to be allowed to continue to fly. Other points in the examination should, however, be taken into consideration.

The averages obtained for these tests from some selected flying officers were:—

Expiratory force 112 mm. Hg.
Mercury held 52 sec.

It is suggested that they should all conform to the minimum standard, and preferably to the average standard.

Results of Tests in Successful Pilots.

Table I. gives a synopsis of results obtained from various sources.

TABLE I.

| Subjects. | Number examined. | Breath held. | Vital capacity. | Supplemental air. | Expiratory force. | Sustaining 40 mm. Hg. |
|---|------------------|--------------|-----------------|-------------------|-------------------|-----------------------|
| | | sec. | c.cm. | c.cm. | mm. Hg. | sec. |
| Fit instructors... .. | 22 | 67* | 4082 | 1620 | 112 | 52 |
| Iditto | — | 46† | 3300 | 1000 | 80 | 43 |
| Home Defence pilots | 24 | 72 | 3940 | 1496 | 119 | 50 |
| British candidates | 23 | 69 | 3823 | 1590 | 106 | 52 |
| U.S. candidates | 7 | 66 | 3814 | 1386 | 116·4 | 53·5 |
| Delivery and test pilots | 10 | 57 | 3620 | 1050 | 108 | 40 |
| Pilots returned for rest | 17 | 57 | 3897 | 1423 | 95 | 40 |
| Pilots training for scouts | 15 | 62 | 3820 | 1433 | 96 | 49 |
| Pilots taken off flying through stress | 27 | 49 | 3480 | 1134 | 74 | 25 |

* Average.

† Minimum.

One or two suffering from stress are included among the Home Defence and test pilots.

Practically all the cases examined in hospital fell below the standard. There was one very interesting case, who came with a letter to the hospital and was examined. I told him he seemed very fit, and on reading the letter afterwards found he was still doing very good service in France and had not really come for treatment to the hospital, but for special examination on account of his fitness and meritorious flying service. Another was a one-eyed man, whose only disability was that he was nearly blind in one eye. I could find nothing wrong by these tests. Many other instances could be given.

Results of Tests in Rejected Men.

Having found standards from the examination of successful pilots, I went to the Commissions Board and examined a number of rejects as the result of the routine examination there. The results are appended in Table II.

It will be seen that except one man, who was unfit on the vital capacity test, every man was rejected by the fatigue

TABLE II.

| No. | Age. | Breath held. sec. | Vital capacity. c. cm. | Supple- mental air. c. cm. | Expira- tory force. mm. Hg. | Sustaining 40 mm. Hg. sec. | Remarks. |
|---------|------|----------------------|------------------------------|----------------------------------|--------------------------------------|----------------------------------|---|
| 1 | 17½ | 55 | 4200 | 1300 | 80 | 42 | Rejected. |
| 2 | 17½ | 84 | 4300 | 1800 | 60 | 25 | " |
| 3 | 18 | 53 | 3700 | 1700 | 55 | 32 | " |
| 4 | 18 | 66 | 3800 | 1650 | 130 | 30 | " |
| 5 | 17½ | 53 | 2800 | 1000 | 60 | 25 | " |
| 6 | 18 | 48 | 3600 | 1650 | 70 | 27 | " |
| 7 | 17½ | 44 | 3400 | 1600 | 120 | 35 | " |
| 8 | 18 | 85 | 2750 | 900 | 100 | 28 | " |
| 9 | 17½ | 71 | 2400 | 1050 | 100 | 50 | Unfit by V.C. standard. |
| 10 | 19 | 50 | 3100 | 1000 | 60 | 20 | Rejected. |
| 11 | 19 | 63 | — | — | 60 | 40 | " |
| 12 | 19 | 42 | 3800 | — | 40 | 33 | " |
| 13 | 23 | 42 | 4200 | — | 60 | 25 | " |
| 14 | 18½ | 84 | — | — | 60 | 33 | M.O. says fit, but does not like him. Referred by assessor. |
| 15 | 22 | 61 | 4100 | — | 100 | 30½ | Assessor did not like the look of them. |
| 16 | 23½ | 63 | 4300 | 1800 | 80 | 35½ | " |
| 17 | 21½ | 55 | 4100 | 1700 | 80 | 37½ | History of migraine; referred by assessor. |
| 18 | 18½ | 48 | 3800 | 1700 | 100 | 35½ | " |
| Average | 58 | 3650 | 1450 | 77 | 32 | | — |

test. Some of these were people whom the medical officer was in doubt about and had sent them for examination, saying he had to pass them fit, but did not like the look of them, though he could see nothing wrong with them.

Importance of Using Tests in Combination.

I do not suggest that any one test should be taken in examining a candidate, but that they should be used in combination, and the instructions are that they should be used by the assessor for his guidance.

The results obtained by Lieutenant-Colonel J. L. Birley from pilots who had been fighting for several months and were being sent home for a rest support the results obtained by the U tube test. These pilots were fairly up to the average standard. On the other hand, cases who had been concussed were below average. One has here, therefore, a valuable test for the effect of crashes.

Lieutenant-Colonel Birley obtained from these found permanently unfit for flying the following results:—

| | |
|--------------------------|------------|
| Average expiratory force | 76 mm. Hg. |
| Sustaining 40 mm. Hg. | 28 sec. |

As I have stated, it is the combination of the tests, however, that is important. The average standards are given in the following table:—

| | Average standard. | Minimum standard. |
|-----------------------------|-------------------|-------------------|
| Breath holding | 69 sec. | 45 sec. |
| Vital capacity | 3900 c. cm. | 3400 c. cm. |
| Expiratory force | 110 mm. Hg. | 80 mm. Hg. |
| Fatigue test (U tube) | 52 sec. | 40 sec. |
| Pulse response to exercise— | | |
| Increase per min. | 12-24 beats | 36 beats |
| Return to normal | 10-20 sec. | 30 sec. |

Practical Value of the Tests.

I believe that every pilot could be overhauled by the breath-holding, expiratory force, and U tube tests and a station graded according to its efficiency. As a matter of fact, this has been done. At a certain fighting station the medical officer found that the average for all the pilots by these tests were—

| | |
|---------------------------|-------------|
| Breath-holding | 65 sec. |
| Expiratory force | 103 mm. Hg. |
| Sustaining 40 mm. mercury | 67 sec. |

He picked out one officer as being badly off colour, a pilot with 250 hours' experience. The pilot soon after went for a flight, there was nothing wrong with the machine, but the pilot lost control, crashed, and was killed. His results for the three tests just previously were—

| | |
|-----------------------|------------|
| Breath-holding | 33 sec. |
| Expiratory force | 95 mm. Hg. |
| Sustaining 40 mm. Hg. | 22 sec. |

The medical officer had suggested that this officer should not be allowed to fly. This unfortunate incident so impressed the commanding officer that the medical officer was asked every week to grade the pilots. It soon became evident that the officers who were picked out by the commanding officer or senior flight officer for special duty were practically always those graded by the tests as extra fit. It would seem from this that the selection of pilots for special work by these tests if adopted would be of great value. The commanding officer eventually made a rule that if an officer did not come up to the standard of the tests he must not be placed in charge of a machine. The medical officer then gave him instructions for making himself fit, and he was told if he was still unfit by the tests in a fortnight he would go up for a board, and possibly be found unfit for flying. This was actually done in one or two cases. By this means the efficiency of the station was greatly increased.

I suggest that these tests would also be of value for measuring trench fatigue, industrial fatigue, and fatigue in women workers; also for the grading of people for positions of trust, such as special motor drivers and members of mine-rescue teams. With special standards set according to age, they would possibly also be of value to educational authorities in assessing how children are maintaining their physical efficiency.

THE TREATMENT OF VENEREAL DISEASE.

By SIR ARCHDALL REID, M.B. EDIN.;

AND

P. HAMILTON BOYDEN, M.D. EDIN.,

SURGEON COMMANDER, R.N.

EVERY great war has been followed by an increase in venereal disease, so marked that on occasions it has amounted to a pestilence. Unless timely sanitary precautions are taken the greatest of all wars is unlikely to furnish an exception to the rule. We think it desirable, therefore, to give an account of an essay in preventive medicine which, as may be judged from the following, achieved considerable success.

One of us (A. R.) has been in medical charge of a rapidly changing body of men generally numbering about 2000. Up to the end of 1916 venereal disease was common among them in spite of numerous moral lectures and in spite of adequate provision of what is known as "early treatment"—that is, disinfection after the "contact" has returned to quarters. At the beginning of 1917 a new system was instituted. The men were instructed to disinfect themselves immediately after danger had been incurred—just as a surgeon would disinfect his hands. This procedure is what is known as prophylaxis. It differs from early treatment merely in that the man carries the disinfectant and uses it immediately. Each man who applied was given an ounce of solution of potassium permanganate (at first in a strength of 1 in 2000, later in a strength of 1 in 1000), a small swab of cotton-wool, and careful directions. Potassium permanganate was chosen merely because it happened to be the most accessible disinfectant. The rationale of the procedure was fully explained, so that on an emergency the man could purchase the materials from any chemist. During 1917 and 1918 about 20,000 men passed through the station, and among them precisely seven cases of venereal disease occurred, six of gonorrhoea and one of syphilis. Of the six cases of gonorrhoea, two only were contracted by men on leave, in each case from the man's own wife. Two of the others were drunk and took no precautions. The fifth man was infected the night he arrived, and he also, being unaware of the system, took no precautions. The sixth man practised early treatment an hour after intercourse. The man who acquired syphilis also carried no disinfectant, and used it (permanganate and calomel) two hours after intercourse. He had a long prepuce, and therefore a sensitive gland, and probably did not—probably could not—rub in the calomel vigorously.

The other of us (P. H. B.) commenced prophylaxis against venereal disease in the Royal Navy in 1907. Some 18 months ago he took over medical charge of an establishment numbering

over 2000 officers and men. The amount of venereal disease, and especially gonorrhoea, was considerable, and it was recognised that of the men who stated they had used the so-called "dread-noughts" some 40 per cent. contracted the disease. It thus became evident that nargol jelly as a preventive was practically inert. For the past nine months the method of immediate prophylaxis by means of the application of a solution of potassium permanganate (1 in 1000) has been employed with results as striking as those mentioned above in the case of the soldiers. Not a single case of gonorrhoea occurred amongst those employing this method, and only one of syphilis. This latter made the application about six hours after exposure to infection, and may therefore be counted out. Unfortunately, the Navy is a very conservative body, and many men still persist in sticking to the "dread-noughts." But in lectures given on the subject of prophylaxis men are gradually being convinced of the simplicity and efficacy of immediate prophylaxis.

The calomel cream is still reserved for those who have omitted to carry the permanganate solution on their persons, as it seems likely that the former affords some protection, even if an hour or two has elapsed since the risk of infection has been run.

It will be seen that no man who followed instructions and disinfected himself immediately acquired disease. Evidently the time element is of extreme importance. Probably there is no special virtue in potassium permanganate. Any other active antiseptic would be equally effective. But permanganate is the cheapest disinfectant and the best known to the public, the least poisonous, and least irritating.

HILUS TUBERCULOSIS IN THE ADULT.

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THE following case, one of many possible examples, illustrates a condition which must be very familiar to all with a wide or prolonged experience of chest disease.

Patient, aged 24 years. History of six months' cough and wasting, night sweats, dyspnoea on exertion, and poor appetite. The patient is very thin and sailow; there is no clubbing. Pulse 128. Temperature 102° F.

Chest.—Reflex bands of impairment are present over the backs. (See Fig. 1.) Movement is equal on the two sides. Percussion finds no impairment, but there is double paravertebral dullness, and the apical resonance (Krönig's isthmus) is narrowed to 2 cm. on both sides (normal 4½–5 cm.). There are no crepitations nor râles, the breath sounds are normal, and the air entry fairly good.

A radiogram shows "disseminated tubercle of fluffy character (alveolar)," to quote the radiologist's report, through both lungs. On the left side almost the whole field is filled, and there is cavitation just outside the root; on the right disease involves, in the main, the upper half of the lung. The root shadows are very heavy, and suggest glandular involvement.

Six weeks later the signs are similar, but a few crepitations have appeared at the left base behind.

Here we have a "central lung" or "hilus" tuberculosis of broncho-pneumonic type, the counterpart in the adult of a condition which is quite familiar to the paediatrist. Because, on account of its striking symptoms and fatal issue, such a case cannot well be overlooked nor the presence of disease denied, it serves very well to illustrate at the outset the condition which forms the subject of the present paper. If the existence of hilus tuberculosis in the adult had to be proved entirely on grounds of the far more common chronic cases, it might be more difficult to bring convincing evidence of its undoubted occurrence. When, however, a patient obviously "consumptive," presents a chest wall entirely innocent of those crepitations which are considered by many the main sign of tubercle, and yet a radiogram shows advanced and active disease, it seems difficult to deny that we are dealing with a process which has developed in the deep parts of the lung and has not yet involved the surface. If, in addition, before death, crepitations appear rapidly over one or both lungs, as commonly happens, then the evidence for outward-spreading disease is still more convincing.

Now, just as acute apical phthisis is rare, so also is acute hilus tuberculosis compared with the quiet and chronic forms which constitute, to those whose eyes are open to their existence, the main bulk of our tuberculous material. It is particularly to this latter class of case that the writer is anxious to draw attention in the present communication.

But before going any further it must be made clear that the term hilus tuberculosis of adults is not here used to include those evidences of obsolete tubercle which are to be found in every X ray plate and are apt to bulk large in the radiological report on a suspicious chest. Such scars of old battle are accompanied by no symptoms, and give rise to no clinical signs at the surface. True, at the time of their development in childhood physical signs were probably discoverable in some proportion at least of the more marked cases if looked for, but such signs vanished with the passage of years, and it is only when disease is reawakened and a fresh spread occurs that the chest changes to be presently described appear, and the case merits the designation of "hilus tuberculosis in the adult." This awakening of obsolete disease appears to add very little that is distinctive to the radiogram so long as disease is of a quiet and chronic type, and thus it happens that the clinician is in reality better equipped for the diagnosis of hilus tuberculosis of this type than is the radiologist. The former can point to signs indicative of recent disease as confirmation of the symptomatic evidence, the latter must rely solely on the symptoms, unfortunately seldom distinctive, as proof of present activity. This is, however, to anticipate what may be more appropriately discussed later on.

It must be understood, then, that the term hilus tuberculosis in the adult refers to a fresh and active process, involving the deep areas of the lungs where remain the old foci of childhood infection, and thence spreading outwards towards the surface. It thus stands in close relationship to the common form of tuberculosis of childhood, though with less tendency to glandular involvement; and also in decided contrast to apical phthisis of adults, a localised infiltration involving the apex of the lung.

Hilus tuberculosis is commonly a peribronchial disease of chronic and intermittent course—our first knowledge of it we owe to the radiologist, whose "peribronchial phthisis" and "peribronchitis tuberculosa" have referred, as a rule, to this condition. From the clinician it has suffered a scandalous neglect, and it is in the form of a somewhat belated atonement that the writer offers the present communication. Only two contributions to the subject on the clinical side have, up to now, come under the writer's notice, both somewhat inadequate from the point of view of the recognition and diagnosis of the disease. Philippi, of Davos, in 1911, gave an interesting description of "intrathoracic glandular and lung-hilus tuberculosis of adults" (to paraphrase his German heading), and in all but the means for its diagnosis the account is clear sighted and fairly complete. Straub and Otten, in 1912 issued from v. Romberg's laboratory in Tübingen a paper which showed that they recognised the hilus origin of certain clinically "unilateral" cases of advanced pulmonary tuberculosis; they do not deal with the early stages of the disease nor with its diagnosis, and many of their cases occurred in children rather than in adults.

Clinical Characteristics of Hilus Tuberculosis.

Before going into the symptoms and physical signs of hilus tuberculosis in the adult, or its differential diagnosis, it will be well to lay down in the rough the main characteristic points which distinguish it from apical phthisis.

1. *Its bilateral nature*.—Wherever the signs may appear on the surface in these cases the central lung disease is practically always bilateral, though stress may fall for a time more heavily on one or other lung. Its bilateral character is generally very evident to radiological examination; it reveals itself clinically in two directions: firstly, movement of the two sides is very commonly equal or nearly so; and, secondly, there is marked retraction of both apices (Krönig's area) to topographical percussion. (See Figs. 3 and 4.) In both these particulars it stands in marked contrast to apical phthisis, and the latter point, the double apical retraction, provides the means by which it is distinguishable from phthisis on the one hand, and from the chest of health, or of chronic bronchitis, on the other, these being the three conditions under which error most commonly arises.

And now if we look back to the case cited at the opening of this paper, what were the characteristic points to observe? (1) The equality of the two sides in movement and in "contrast percussion." (2) The double narrowing of the apices—only 2 cm. instead of the normal 4½–5 cm. Both these points are evidence of bilateral disease. (3) The absence of crepitations at the surface, evidence of the deep-lying location of the disease. And this last point brings us

to the second main characteristic of hilus tuberculosis—namely, the atypical distribution of the signs when they do reach the surface, a point in the diagnosis of cases already advanced.

2. *The atypical location of surface signs.*—Just as in pulmonary tuberculosis of the young child—always a hilus tuberculosis save where a miliary dissemination has occurred—the stethoscopic signs may appear at any point on the chest wall, and no spot is truly characteristic, so in hilus tuberculosis of the adult. When the disease which has been smouldering for so long, too often unheeded, deep in the lung, at long last reaches the surface, it does so at some spot other than the apex of the lung. Very commonly crepitations appear over the front of the chest on one side, often in the axilla, not infrequently at the base behind. Since disease spreads out from the root fanwise along the lung framework towards all points of the surface, it is obvious that it may first reach the stethoscope of the physician at any point. Similarly it must be expected that when disease has reached the surface at one point it will not be far from the surface at other points also. And this brings us to the third characteristic point about hilus tuberculosis.

3. *The characteristic spread of stethoscopic signs over the lung surface.*—Having once reached the surface at one point, the signs, crepitations and the like, tend quickly to spread, unless disease becomes arrested, over the greater part of that side, front and back, often within a comparatively few weeks. On this account it is not uncommon to meet with cases of clinically “unilateral” tuberculosis involving the whole or greater part of one lung and apparently sparing the lung on the opposite side. This unilaterality is, however, apparent only, and a radiogram will reveal disease of little less extent, though often of lower activity, throughout the other lung also. If disease is progressive in this second lung, and it soon becomes so when “tolerance” to autotuberculin fails and fever shows itself, signs will soon appear at this surface also and spread rapidly in area just as on the first side involved. Even before crepitations appear the patient may be dyspnoic and cyanosed from the abundance of deep disease.

Here, then, before discussing its physical signs and diagnosis, we have an outline of the three main characteristics which tend to mark down the hilus origin of a case of pulmonary tuberculosis. No further notice will be taken of cases so far advanced as to give stethoscopic signs at the surface, and, indeed, the majority of cases never reach this stage. The rest of our space will be directed to the symptoms, clinical signs, and differential diagnosis of hilus tuberculosis in its early and curable stages and in its chronic forms.

Symptoms.

Such symptoms as are of toxic origin are identical for hilus tuberculosis and apical phthisis. In addition, certain symptoms occur which may be considered more characteristic of hilus tuberculosis than of apical phthisis. Particularly, shortness of breath on exertion is a symptom which is often prominent, and due in some cases to widespread peribronchial disease and in some to the emphysema and bronchitis which are occasional complications. Chest pain is also fairly common, often in the central regions of the chest, occasionally in the side in association with the marginal pleuritis which are such frequent accompaniments of this disease.

Physical Signs.

A patient comes to his physician with symptoms suggestive of tuberculous chest disease, but on examination no signs are present pointing to the unilateral apical infiltration characteristic of apical phthisis—how is “central lung” or “hilus” tuberculosis to be detected? If this disease is present we shall find the following signs:—

Inspection and Palpation.

On inspection and palpation it will be established that chest movement is equal in the two sides, at least in early stages. In certain cases, however, the stress of disease may fall more decidedly on one lung, particularly the right, or decided pleuritic involvement may occur. Then of necessity a unilateral limitation of expansion is present, as in phthisis, and the characteristic balance of movement is lost.

Percussion.

Through percussion are achieved the main elements of diagnosis.

1. *The reflex bands of impairment* over the backs described by the writer in a former communication¹ as evidence of active parenchymatous disease will be present (see Fig. 1).

2. There may be a slight difference of note between the two sides of the chest to “contrast percussion”; and this is commonly against the right side.

3. Often there is present a wide and well-marked area of *paravertebral dullness* on the right side (Fig. 2), a point on which Philipp² very rightly laid stress in the diagnosis of these cases. This area is familiar to pediatricists and is acknowledged evidence of intrathoracic glandular enlargement, mainly, the writer has reason to believe, enlargement of bifurcation glands causing pressure on the right pulmonary artery, and thereby reducing the function and volume of the right lung. This dull area may overstep the normal “oval interspinous dullness” (see Fig. 2) between the first and fifth dorsal spines, so as to stretch out some 6 or 7 cm. on one or both sides and extend down to the sixth or seventh dorsal spine.

Parasternal dullness is sometimes present, though less often than paravertebral, and it generally points to enlargement of lateral tracheal and tracheo-bronchial glands. Normally there exists some 2½ cm. (1 inch) of impairment on each side of the sternal border, and this may be increased in these cases to 5 or 6 cm. on one or both sides.

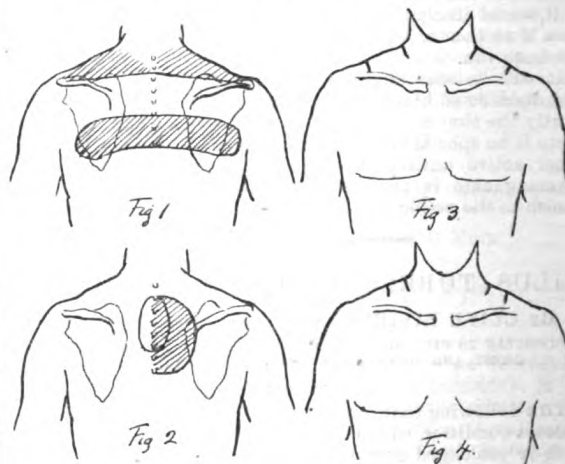


Fig. 1.—Reflex bands of impairment. Fig. 2.—Paravertebral dullness. Figs. 3 and 4.—“Krönig's isthmus” of apical resonance, normal and reduced.

4. Most important of all as evidence of deep disease we find a *bilateral narrowing* of “Krönig's isthmus” of apical resonance at the top of the shoulder. (See Figs. 3 and 4.) In the normal chest this “isthmus” measures 4½ to 5 cm. on each side, though in women and undersized men of sedentary occupation it may fall as low as 4 cm. In cases of hilus tuberculosis we find it considerably reduced on both sides, very commonly to 2½ cm. This bilateral narrowing gives us valuable evidence in two directions. Firstly, it is no healthy chest we are examining—though nothing else can be found at the surface we can be quite sure that some central disease, whether of present or recent activity, is present. Secondly, a bilateral narrowing is not characteristic of apical phthisis, save in its later and bilateral stages when abundant other surface signs will be present. In phthisis, as a rule, the retraction of the isthmus is less marked—often only to 3½ cm.—and in early stages is unilateral.

A comparison of the width of the apical resonance in a number of cases taken at random will serve to bring out clearly the importance of this sign in the differential diagnosis of hilus tuberculosis.

| Hilus tuberculosis. | | Apical phthisis. | | Chronic bronchitis. | |
|---------------------|--------|------------------|-------|---------------------|--------|
| Right. | Left. | Right. | Left. | Right. | Left. |
| 2½ cm. | 2½ cm. | 3½ cm. | 6 cm. | 4½ cm. | 4½ cm. |
| 2½ " | 2½ " | 2½ " | 5½ " | 4½ " | 4½ " |
| 3 " | 3½ " | 5 " | 3 " | 5½ " | 5½ " |
| 2 " | 2 " | 3½ " | 4 " | 3½ " | 3½ " |
| 2½ " | 2 " | 6 " | 3 " | 4 " | 4 " |

5. In hilus tuberculosis of adults *tidal movement* at one or both bases may be diminished or may entirely fail. In the absence of extensive lung disease loss of tidal movement usually indicates adherent pleura, and this is especially so where the loss is on one surface only. Pleurisy is a very frequent complication of hilus tuberculosis, but pleural adhesions are by no means a necessary accompaniment.

¹ THE LANCET, 1915, II., 387.

Auscultation.

Of auscultation in all but the last stages of hilus tuberculosis there is little or nothing to be said. As already indicated, the surface will be entirely free of stethoscopic signs, even though extensive disease occupies the deeper parts of the lung. Still more is this the case in those earlier or more chronic cases for whose recognition and detection the writer here offers a plea.

But though no crepitations are to be expected at the surface in such cases, other signs may be incidentally met with in certain cases. Thus, fleeting marginal pleurisies are common, and fine friction, with or without pain, may be discovered at one or other base or axillary region. Fine inspiratory sounds of indeterminate or mixed nature are also often heard at the bases in cases of hilus tuberculosis in the adult, as in children. These may be atelectatic, or may stand for cedema or lymph stasis, or may be mere tissue sounds developed under pressure of the stethoscope—their nature generally remains undecided! If the breath sounds are "blowing" at the right apex, as sometimes happens, this may be due to glandular enlargement, and is not necessarily evidence of pulmonary consolidation.

Radiographic Appearances.

Something must be said of the radiographic appearances, and these may be conveniently divided into three types according to the activity of the process.

Chronic and quiet disease with little or no evidence of activity.—This represents perhaps the commonest type of case, the evidences of activity being entirely dependent on other factors than the X ray picture. The main point about the radiogram is the abnormal visibility of the whole lung reticulum, which appears thick and strongly shadowed in all its "twigs" right out to the periphery. The main branches appear thickened, often wide and tape-like, or may appear as rings or figures-of-eight, with or without some dilatation of their lumen. The whole picture has a general "fibrous appearance," nodules may be absent and yet the case tuberculous, or there may be a nodular appearance throughout. In many of these chronic cases the radiogram may present so "fibrous" a picture that it is hard to believe any activity can be present. Yet the patient may present symptoms and develop a fresh pleurisy as evidence that the process is not obsolete.

In hilus tuberculosis, of whatever form, it often appears that the diseased area is, roughly, equal on the two sides and often reaches nearly to the periphery; it may present a sharply-marked outer margin, giving a butterfly appearance and strongly suggesting a simultaneous spread out to this point rather than a slow creeping outwards. Indeed, judging from the X ray and post-mortem experience, the writer is convinced that a simultaneous "sowing" of disease over a wide area occurs not infrequently, though the gradual outward spread presumed in the general description of the disease can also be proved to occur, and is perhaps the rule.

More active disease.—This may show itself in a more woolly and less sharp-cut appearance of disease which yet remains, to X ray examination, purely "peribronchial." The thickening of the bronchi is more marked both round the root and farther out in the lung, and a nodular or even "budding" appearance may be noticeable. The finer network of the lung is thickened irregularly or nodular shadows of various size and not very sharp outline may be linked up in it.

Active and acute disease.—This is sufficiently illustrated by the X ray plate of the case described at the opening of this paper. The strands of the lung network vanish and the pulmonary fields become filled with woolly bronchopneumonic shadows of smaller or larger size, with eventual coalescence and cavity formation.

Differential Diagnosis.

And now, having indicated something of the symptoms and physical signs, and of the general characteristics of hilus tuberculosis in the adult, it still remains to emphasise the main points in its differential diagnosis. And first of all it is necessary, in the early cases, to indicate the points which separate the *healthy chest* from that containing a central lung lesion. For those who are careless over their physical signs the healthy chest is merely one that presents equal movement on the two sides, no obvious areas of dullness, and no stethoscopic signs. But the chest of early hilus tuberculosis shares with the normal chest all these negative points; hence these are useless in its diagnosis. Only after Krönig's isthmus has been carefully mapped and measured, paravertebral and parasternal dullness searched for, and, less important, tidal movement at the bases explored, can early hilus tuberculosis be excluded. In particular, it cannot be too strongly insisted that Krönig's apical resonance represents one of the essentials of chest

examination, since it supplies practically the only key to the condition of the central area of the lung. True, the X rays will also reveal these central areas, but the information they give is largely clouded by the constant presence of the shadows of obsolete tubercle remaining from the common childhood infection; the question of recency and activity cannot be decided with the X rays save for acute forms of the disease, with which we are not here concerned. The points on which a differential diagnosis must be based may be shortly indicated as follows:—

| — | Normal chest. | Early hilus tuberculosis. |
|-----------------------------------|-------------------|---|
| Reflex bands (Fig. 1). | Absent. | Present. |
| Krönig's isthmus (Figs. 3 and 4). | Of normal size. | Contracted on both sides. |
| Paravertebral dullness (Fig. 2). | Absent. | Often present on right side. |
| Parasternal dullness. | " | Present in some cases. |
| Tidal movement. | Of normal amount. | Often absent or reduced on one or both sides. |

Having discovered through the evidences of these signs that the chest under consideration is outside the normal, what proof have we that the malady is of tuberculous causation? Often, it must be confessed, very little in the individual case. For hilus tuberculosis may smoulder for years without any very characteristic symptoms, and tubercle bacilli may be absent from the sputum almost throughout its course. Where there are definite evidences of glandular enlargement, as shown in paravertebral and parasternal dullness, the case presents striking similarity to tuberculosis of childhood, and there exists strong probability of its tuberculous nature. Where, however, the only definite sign is a double narrowing of Krönig's area (and again it must be insisted that a healed childhood infection does not leave this sign behind), we have evidence of a central lung lesion but none of its activity, and still less of its tuberculous causation. We must look elsewhere—to symptoms mainly—for evidence that disease is not arrested or healed, and in doing so we sometimes find tubercle bacilli present and our whole difficulty solved.

Failing this fortunate chance, only an appeal to experience can supply us with means of reaching conclusions at least of high probability. For, apart from the well-recognised predilection of tubercle for the lung root, its almost constant presence as the result of a childhood infection, and its known tendency in this situation to persistent quiet activity and intermittent spread, we shall have clear recollection of patients with identical physical signs who later passed over into the region of proved tuberculosis. (The writer is here presuming that his own experiences are, or may become, common to others.) Our position is little worse than in the diagnosis of apical phthisis in the absence of bacillary sputum, again a matter of probability of a high degree.

"Given apical changes," remarked Turban, "without previous pneumonia, and when inhalation of dust can be excluded, then the diagnosis is almost certain."

And the same might be claimed, perhaps, for central or hilus lung disease. A patient with narrowed apices and suggestive symptoms, but with no history pointing to dust inhalation, may be regarded as probably suffering with active peribronchial tuberculosis; a patient with narrowed apices and no symptoms is probably the victim of arrested disease of similar causation. For, failing this explanation, there must exist a disease, presumably a peribronchitis of chronic course, of whose causation and pathology we are at present entirely unenlightened—a rather improbable proposition in the writer's opinion. Only occasionally, indeed, in these cases do other points fail to give additional support to their presumed tubercular origin—paravertebral dullness in a large proportion of the cases, and not infrequently the occurrence of a "marginal" pleurisy at one or other base.

The differentiation of hilus tuberculosis from *apical phthisis* is, as a rule, simple and straightforward, particularly in its early stages. With the advance of disease the two conditions may become difficult or even impossible to separate. Indeed, it must be admitted that between the two characteristic types intermediate pictures of disease may be observed not clearly conforming to either, or possibly a blending of both. But in spite of this occasional failure of type the differential diagnosis can generally be made, and

It is always worth an attempt on account of the differing course and prognosis in the two conditions. For hilus tuberculosis is nearly always of peribronchial type and extreme chronicity; tending to spread over wide areas, often with greater mechanical than constitutional disturbance; becoming arrested for long periods; showing occasional activity, often of a pleuritic nature, and then again dying down. Smouldering always, and always difficult to quench, but only at long last, and in exceptional cases, breaking into a conflagration of such intensity as to threaten life, and then usually at so advanced a stage that the outlook is obviously hopeless. The broncho-pneumonic case quoted at the beginning of this paper presents only a rare exception to the usual course.

In all particulars of its spread it stands in some contrast to apical phthisis, of which the immediate prognosis is always more serious and uncertain, and which moves forward more rapidly, accompanied by fever and constitutional disturbance, albeit with periods of arrest, towards its ultimate ending in death or cure.

Already, under the heading of the characteristics of hilus tuberculosis, some of the main points of distinction from apical phthisis have been insisted on—its bilateral character from the beginning, its appearance at other points than the apex of the lung, and its spread over a wide area of the chest wall once the surface is reached. In practice the differential points may shortly be tabulated as follows.

| | Hilus tuberculosis. | Phthisis. |
|---------------|--|--|
| Inspection. | Nothing characteristic, but any change, such as flat chest or emphysema, will be bilateral. | Flattening or hollowing and lagging of one apex in advanced disease. |
| Per-cussion. | Perhaps slight "contrast" impairment on one side, generally the right. Parasternal or paravertebral impairment, or both. Bilateral narrowing of Krönig's isthmus. (Fig. 4.) | Decided impairment at one apex. Neither. |
| Palpation. | Movement equal or nearly so on the two sides. | Unilateral narrowing of less extent. Unilateral deficiencies of movement. |
| Auscultation. | No stethoscopic signs at earlier stages, at most fleeting pleuristics or transient basal crepitations; then granular breath sounds over a wide area, changing to crepitations. Wide areas involved, often the middle or base of the lung. Often the whole of one lung involved before signs appear on opposite side. | Fairly early stethoscopic signs at one apex, soon crepitations here, later at opposite apex. |

So much for the differential diagnosis between these two forms of pulmonary tuberculosis, or rather between fairly typical cases of each. That many borderland cases occur whose classification is doubtful the writer has already indicated, but the classical case of hilus tuberculosis at a characteristic stage clearly belongs to a type by itself. Where an element of doubt in their differentiation must sometimes exist is in the eventual progress of certain early examples of disease—whether these must necessarily be regarded as on the way to become hilus tuberculosis as we eventually see it, or whether their future advance might be on the lines of an apical phthisis. This is a matter on which there can exist no great certainty at present. For these earliest examples might possibly represent, in some cases at least, a "sub-tuberculous" stage from which both phthisis and hilus tuberculosis may later emerge, and the writer has not shut his eyes to this possibility. But for one of these early cases, with double narrowing of apices, to progress towards apical phthisis it would be necessary for this apical contraction to open out. This the writer has never known to occur under observation, unless perhaps partially in a single case. As a rule, the apices tend to become narrower with time, whether with a spread of disease in a progressive case, or with fibrotic changes where repair is taking place. More tempting is it to assume a true etiological distinction between the two types of disease, hilus tuberculosis being regarded, as the writer has frankly presumed it at an earlier stage of this paper, as a reawakening of the arrested lesions of childhood, and phthisis as a reinfection from without. If this were a true picture of the case, then there could of necessity be no early stage common to both diseases.

Variations in Type of Case.

And now, at the close of this paper, it is necessary to mention the existence of certain variations from the common type of hilus tuberculosis outlined above.

1. *Hilus tuberculosis associated with bronchitis.*—In many cases of hilus tuberculosis of chronic "peribronchial" type there is a tendency to attacks of bronchial catarrh, and the recurring cough and sputum are often, in all probability, of this origin. Certain cases may, indeed, present all the symptoms and many of the signs of chronic bronchitis with emphysema, and often with asthmatic attacks.

As a rule, there are certain points which direct attention in such cases to the underlying tuberculous disease. The history is likely to be of short duration, and wasting will generally be a prominent symptom. Often one or more brothers and sisters of the patient are pronouncedly tuberculous. The pulmonary signs may be in most respects typical of chronic bronchitis, though often with a bias of signs against one side of the chest. But it is to a narrowing of Krönig's isthmus that we must look for more definite evidence of central disease. In chronic bronchitis it might well be expected that Krönig's isthmus would commonly, owing to the presence of emphysema, show a more or less striking enlargement. In some cases, truly, the apex may be as wide as 5½ cm. or even 6 cm., or it may maintain the normal 5 cm.; but much more frequently the raising of the shoulder girdle, and possibly also the development of some amount of peribronchial fibrosis, tend to reduce the isthmus to a figure rather below the normal, often to 4½ cm. or 4 cm. In some cases where the isthmus is diminished to 3½ cm. doubt will be felt whether the condition belongs to the category of simple bronchitis or not. Where the reduction is to 3 cm. or 2½ cm. there is decided evidence of central lung disease, and in the absence of a history of exposure to dust diseases this will probably be hilus tuberculosis. The possibility of tubercle masking under the guise of asthma or chronic bronchitis must always be borne in mind.

2. *Hilus tuberculosis, with tuberculosis of manifest glands.*—These are cases in which gross enlargement of the cervical and axillary glands occurs, and sometimes of other groups. The lung condition is usually a secondary incident, and the chest picture is that of enlarged chest glands. The writer has had five such cases under his care, and in two of these there was associated enlargement of the thyroid gland. It is to this class of case that Philippi called particular attention, insisting above all on the characteristic parasternal and paravertebral dullness.

3. *Hilus tuberculosis of broncho-pneumonic type.*—This has already received illustration at the outset of this paper. Suffice it to remark once again that this represents but a rare variety of the disease. Hilus tuberculosis in its characteristic type runs a chronic and intermittent course, and when the proper means are employed for its recognition it will be found to be of widespread distribution, and even to constitute the most prevalent form of pulmonary tuberculosis in the adult as well as in the child.

Queen Anne-street, W.

THE SUBSTITUTION OF AIR FOR OXYGEN IN ANÆSTHESIA WITH HEWITT'S GAS AND OXYGEN APPARATUS.

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SOME months ago, during a temporary failure in the supply of oxygen for anæsthetic purposes, it occurred to me to try ordinary air in place of oxygen with the Hewitt's apparatus in general use here. This proved so satisfactory that the use of gas and oxygen has been entirely discontinued at this hospital, and some hundreds of administrations of duration varying from a few minutes to a full hour have been given by the air method.

The air is supplied by a foot-bellows such as that made by Messrs. Fletcher, Russell and Co., of Warrington, which is attached to the oxygen tube of the apparatus, and the two bags are easily kept full by the same foot.

The Hewitt apparatus is provided with a series of ten holes for the graduated introduction of oxygen to the inhaler, and by means of a coarse adjustment representing 10 and 20 holes the number used can be varied from 1 to 30. In working with air it is, of course, necessary to use a freer entry than is the case with oxygen. The method employed is as follows:—

A perforated metal "cotton-reel" gag is placed between the teeth, and a square of Gamgee tissue with a central cruciform hole intervenes between the face and the mask. The gag is set slowly leaking from the cylinder into its bag, so as to keep it just fully distended, while the air-bag is kept in the same condition by the foot-bellows. About seven "holes" are opened for air entry at the beginning of the administration, and this number is rapidly increased by means of the coarse adjustment to nearly the full 30 as soon as the breathing becomes deep. This is in some cases

sufficient to avoid all cyanosis, stertor, or jactitation, during the induction period, but many patients also require an occasional breath of pure air at this stage. The pupil dilates somewhat towards the end of the induction period, but soon returns to a mid position and remains so throughout the administration. The colour is, on the average, slightly more dusky than when oxygen is used, but the difference is small. The induction takes distinctly longer than with oxygen, and the surgeon generally wishes to begin too soon.

Breathing soon becomes regular and moderately deep, and the air entry can then be reduced. There is much variation between different individuals in the amount of air required to maintain complete quiet anaesthesia. The average amount is 15 to 20 "holes." Some do best with fewer than ten, while others require nearly the full 30 "holes," and others, again, an occasional breath of pure air in addition. Towards the end of a long administration more air and less gas is needed, especially with greatly debilitated subjects.

No ill-effects have been noticed during or after administration, and I have not come across any instance of post-anaesthetic vomiting. The limitations of this method are much the same as those of gas and oxygen, though it is undoubtedly easier to produce and maintain a satisfactory degree of muscular relaxation when using air. It is very easy to administer in cases where vitality has been reduced by shock, hæmorrhage, or sepsis, while strong, full-blooded men are difficult subjects.

I have not so far used the method for intra-abdominal operations, and for intra-thoracic I prefer oxygen bubbled through chloroform and warmed by the Shipway apparatus; but for amputations and most general surgical procedures it is well adapted unless postural requirements contra-indicate by rendering it difficult to maintain the face-piece in position. This method has advantages over gas and oxygen from the points of view of economy and portability of apparatus.

STAMMERING IN THE WAR PSYCHO-NEUROSES.

By E. PRIDEAUX, M.R.C.S., L.R.C.P. LOND.,
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STAMMERING is a common symptom of the war psycho-neuroses, and appears to be one of the most difficult symptoms to treat. The original theories on stammering pointed to some physical cause as the basis of the condition and regarded as responsible factors some weakness of the organs of articulation, or tongue, or incorrect respiration with spasms of the diaphragm, &c., perhaps connected in some way with the blood-supply of the brain. Most of the treatment at the present day has been based on these old theories and consists of various forms of complicated speech-drill and regular breathing exercises. The partially successful results, obtained by these methods, have convinced both the instructors themselves, and others, of the apparent truth of these theories, and there seems some danger that we should lose sight of the real nature of the affection and the process underlying the mechanism of its cure.

The Part Played by Suggestion.

The history of the treatment of stammering, which includes the use of drugs, both internally and externally, surgical operations such as that of Dieffenbach by cutting the root of the tongue, or of Braid, by removing the tonsils and uvula, various forms of electricity and hypnosis, all of which have been successful in their day, must make one suspect that the present various methods of speech-drill and breathing exercises, owe their efficacy to the same mechanism—namely, "suggestion."

My own experience in the treatment of war stammerers has convinced me that this is the case. I have removed stammers by direct verbal suggestion, both in the waking and hypnotic states, and by indirect suggestion by insinuation, with the help of electricity, or different forms of exercises and speech-drill, the effects of which have produced physical reactions directly opposed to each other. I have also used Luys' old method of so-called "transfer," with the help of a hypnotised subject. Some of the patients treated by these methods had been attending stammering classes for five months, and gave up their stammer in as many minutes.

Just as a stammer can be made to disappear by suggestion so it can be reproduced by suggestion in certain subjects. A few of my cases give a history of beginning to stammer only when being brought into contact with other stammerers. This is the process named by Freud "identification." They stammer because they have had the same experience as the others, and do so by auto-suggestion. I have never known a patient who is undergoing treatment and understands his condition get a stammer in this way.

Stammering as a Symptom of Hysteria.

Stammering, then, must be considered as a symptom only of hysteria, for it even conforms to Babinski's limited definition¹ that "hysteria is a pathological state manifested by disorders, which it is possible to reproduce exactly by suggestion in certain subjects, and can be made to disappear by the influence of persuasion (counter-suggestion) alone."

It is also a very good example of Janet's² "disposition to equivalences" in hysteria, the tendency of one apparently quite different symptom taking the place of another. Yealland's³ case of an officer with monoplegia of the lower limb who returned two days after his leg had been cured, with a stammer, is an instance of this disposition. An interesting case of mine showed this very markedly. The patient had been a stammerer since childhood, and at the age of 21 developed a monoplegia of the right arm after an accident. Two months elapsed before he came to me for treatment, and during this time and on admission he had no trace of stammer. After recovering the use of his arm the stammer returned, and was removed by further mental analysis.

Stammering following removal of mutism and aphonia is also an example of the disposition to equivalences, and does not occur after modern psycho-therapeutic methods. In the same way other symptoms may appear as the result of removing a stammer, when the underlying psychical cause has not been discovered and explained to the patient.

The psychical nature of the condition is also shown by the following facts. In my experience stammerers who have developed their stammer after having once learnt to talk normally in childhood, do not stammer in their sleep, or when standing on their heads; they can sing and whisper without stammering, and stammer less, or not at all, when talking to inferiors, or reading aloud to themselves. On the other hand, they stammer more when in a state of emotion, and stammer particularly over words and incidences which are associated with some past emotional experience of a painful nature.

These facts have led me to believe that the physical theories as to the origin of stammering, such as hyperæmia of the brain,⁴ muscle spasms, and weakness of the organs of articulation, are quite untenable, and that the present treatment, by physical methods founded on these theories, is wrong in principle, and often does harm, even when it is used by those who recognise the psychical nature of the condition.

Treatment.

In the war psycho-neuroses we meet with two distinct classes of stammer:—

1. That in which the stammer is more or less constant, when the patient does not really concern himself about his stammer; it resembles in this respect mutism, aphonia, monoplegia, &c., and is the true hysterical type, belonging to Freud's "conversion hysteria" class.

2. That in which the patient is intensely anxious about his stammer, and in which the dread of stammering is sufficient to keep up the condition. It may only occur in a state of emotion, and it is more marked in relation to words and incidents associated with past emotional experiences. This is the "psychasthenic" type, and belongs to Freud's "anxiety hysteria" class.

The treatment of these two classes is fundamentally the same—viz., finding out the underlying psychical cause for the origin of the stammer, which will be found to be connected with some past emotional experience of a painful nature, giving rise to mental conflict and undergoing repression.

In the true hysterical type I think it is better to remove the stammer first by some form of persuasion or suggestion, using the simplest method possible, so that the patient realises that he himself is responsible for the cure, as emphasised recently by Dr. T. A. Ross.⁵ Physical exercises for this type may be used as a means of suggestion and do no harm,

provided that the process is carried through in one sitting, but they are not necessary. After this a short mental analysis and explanation are required to complete the cure. I used to rely on some form of suggestion only, but I soon found that permanent cure was uncertain. The analysis must discover the moment when the stammer or its equivalent symptom first appeared and the circumstances which led up to it; all the unpleasant experiences must be fully brought back to memory, so as to produce complete abreaction, and the patient must be encouraged to talk freely about them, for "an emotion, which is judged, and which has become an integral part of acquired consciousness, is by this very fact no longer an emotion."

The treatment of the psychasthenic stammer is more difficult, and more prolonged mental analysis is generally necessary. In this class I think that physical exercises definitely do harm. They attract the patient's attention still more to his speech, make him painfully conscious of his stammer, and increase his dread, thereby increasing the repression of his past experiences. I find that it is better to make no attempt to treat the psychasthenic stammer as such. I explain to the patient why he stammers, and reassure him as to its removal. I tell him that the stammer is only an expression of the condition of his mind, just as weeping is, but that in the former he is unconscious of the cause, and that when we have discovered the cause the stammer will disappear. When this has been done, and the patient is able to talk about his experiences without emotion the stammer gradually disappears.

My experience of war stammers has convinced me that stammering in civil life must be due to similar causes, that habit does not play such an important part as is supposed, and that the best method of treatment is by mental analysis.

References.—1. Hysteria, Babinski and Froment. 2. Major Symptoms of Hysteria, Janet. 3. Hysterical Disorders of Warfare. 4. Journal of Royal Army Medical Corps, August, 1917, C. MacMahon. 5. THE LANCET, 1918, II., 516. 6. Psychotherapy, Dejerine and Gauckler.

A SIMPLE METHOD OF STAINING THE DIPHTHERIA BACILLUS BY A TOLUIDINE BLUE ACETIC ACID MIXTURE.

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NUMEROUS methods of staining have been devised to differentiate the *Bacillus diphtheriae* from allied organisms occurring in cultures from throat swabs. Of these methods that of Neisser is probably the most extensively employed, as experience has shown it to be reliable, and it clearly brings out the characteristic polar bodies of the bacillus. Neisser's procedure has, however, the disadvantage that the counter-staining, washing, and drying of the films occupies a considerable amount of time, a matter which is of importance in public health laboratories where large numbers of cultures are examined daily. For routine examinations the use of methylene blue applied in the manner recommended by Cobbett and Phillips (1897) has the advantage in this respect. In this method the smear is made on a cover-glass and is allowed to dry; a drop of dilute Löffler's methylene blue (1 in 5) is then placed on a slide and over this the cover-glass is placed film side down. The excess of stain is removed by pressing the preparation cover-glass downwards on a layer of filter paper and the specimen is ready for examination. The staining is inferior to that obtained by Neisser's method, as the *Bacillus diphtheriae* has very frequently a segmented appearance and the polar bodies are not clearly shown, with the result that it is often difficult to distinguish it from the longer forms of Hofmann's bacillus. Later, Cobbett (1901) showed that by running a few drops of dilute acetic acid (5 per cent.) under the cover-glass the bodies of the bacilli become decolourised, and the polar granules tend to become more clearly defined.

After a considerable experience of the use of Cobbett's method it was thought that it might be possible to prepare a stain which, applied in a similar manner, would give results more closely resembling those obtained by Neisser's stain. Numerous stains and combinations of stains were tried, and it was found that toluidine blue, owing to its polychromatic properties, gave the most satisfactory results. The use of

toluidine blue for the staining of *Bacillus diphtheriae* has already been recommended by Pugh (1905) and by Ponder (1912). Pugh's formula was tried, but was found to contain too much acetic acid.

The stain, the composition of which is given below, was finally adopted in the Public Health Laboratory, Wakefield, in 1910, and the formula was published in a short note in the bacteriological section of the annual report of the county medical officer for the West Riding of Yorkshire for that year. The method has now been in use for a period of eight years, during which time the annual average number of specimens examined has been 7000; it may, therefore, be of interest to those engaged in similar work to describe the method.

The staining solution, which keeps well, has the following composition: toluidine blue, 0.1 g.; glacial acetic acid, 0.5 c.c.m.; distilled water, 100 c.c.m.

The smears are made on slides and are fixed with heat in the usual way. When large numbers of cultures have to be examined it is most convenient to make the smears in a series of 10 or 12 at one time. A drop of the stain is placed on each film and a cover-glass is then placed over the preparation. The excess of stain is removed by blotting each slide between two layers of blotting-paper immediately before being examined. The first slide is ready for examination about one minute after the stain is applied, and the others are taken in rotation. The best results are obtained by using strong artificial light.

When stained in this way the polar granules of the *Bacillus diphtheriae* are of a deep reddish-purple, while the bodies of the bacilli appear faintly blue. Most of the organisms found in diphtheria swabs, including Hofmann's bacillus, are more faintly stained, so that the *Bacillus diphtheriae* is readily detected when present only in small numbers.

The stain may also be used in a similar manner for demonstrating the bacillus in smears made direct from the swabs, in which case the film should be allowed to stand in the stain for from two to three minutes before removing the excess.

References.—Cobbett and Phillips (1897): The Pseudo-diphtheria Bacillus, Journal of Pathology and Bacteriology, vol. IV., p. 193. Cobbett (1901): A Note on Neisser's Test for Diphtheria Bacilli, THE LANCET, 1901, vol. II., p. 1403. Pugh (1905): A Note on the Examination of Cultures and Smears from the Throat and the Nose, THE LANCET, 1905, vol. II., p. 80. Sutherland (1910): Annual Report of County Medical Officer, West Riding of Yorkshire, 1910, p. 21. Ponder (1912): The Examination of Diphtheria Specimens, A New Technique in Staining with Toluidine Blue, THE LANCET, 1912, vol. II., p. 22.

Corrigendum.—At the head of the last column of the table illustrating Dr. I. Harris's note on the Inverted "T" in the First Lead of the Cardiogram (THE LANCET, Feb. 1st, p. 168) ? T. should read ? P. T was inverted in all the cases. We regret the error, which was not the author's.

LITERARY INTELLIGENCE.—The University of London Press announce the issue of five further volumes in their Military Medical Manual Series as follows: Disabilities of the Locomotor Apparatus, by Aug. Broca, edited by Sir Robert Jones; Electro-Diagnosis of War, by A. Zimmermann and P. Perol, edited by Dr. E. P. Cumberbatch; Wounds of the Pleura and Lung, by R. Grégoire, edited by Lieutenant-Colonel C. H. Fagge; Mental Disorders of War, by Jean Lépine, edited by Dr. Charles Mercier; Commotions and Emotions of War, by A. Leri, edited by Sir John Collie.

A DOCTOR'S WELCOME IN UGANDA.—Medicine earns its due meed of recognition in Uganda, where, at Kampala, Dr. Albert Ruskin Cook, superintendent of the hospital, had a great reception from the European, native, and Indian communities on his recent return from England, where he had received a decoration of the Order of the British Empire. At the official residence of the Kabaka there was a large gathering of guests assembled to present an address of welcome, including the Bishop of Uganda, Mr. Pellew-Wright, the Deputy Commissioner, and Sir Apolo Kagwa, ex-Regent and present Prime Minister. The address was read by the Lukiko's secretary, Musa Musoke. The Indian community erected a handsome arch on the public road bearing the inscription, "Welcome to Dr. and Mrs. Cook." A necklace of flowers was presented by Mr. M. M. Khandwala, president of the Indian Association, who also read an address of welcome. The day ended with the cutting the brides' cakes by Dr. Cook and his wife for the double wedding in Namirembe Church, when the twin daughters of Sir Apolo Kagwa were married to the sons of important chiefs.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Gonorrhœa of the Genito-urinary Passages.

A MEETING of this society was held on Jan. 27th, Dr. A. F. VOELCKER (Major, R.A.M.C.T.), the President, being in the chair, when Brevet Colonel L. W. HARRISON opened a discussion on Gonorrhœa of the Genito-urinary Passages.

Colonel HARRISON said: I confess that since I accepted the honour of your invitation to open a discussion on gonorrhœa I have looked forward to the event with considerable misgiving. For I have no hope of being myself able to say anything which is new and instructive to the members of this learned society, and can only trust that I may induce others to discuss certain details connected with the treatment of acute gonorrhœa which may be interesting and profitable to us all. The points which I propose to raise are connected with the abortive treatment of gonorrhœa, some details of the technique of irrigation, and the attack on the gonococcus through the blood stream.

Abortive Treatment of Gonorrhœa.

In other places I have frequently said that if the general public only realised how easy it is to abort gonorrhœa when treatment commences on the very first day, and yet how very difficult it is to cure it when it has been given a start of even two days, they would apply for advice on the first appearance of any abnormality, and gonorrhœa would cease to be the scourge it is. As you know, the gonococcus is an extremely easy germ to kill with antiseptics, provided that those antiseptics can only reach it, and had it not been for its faculty of penetrating to the deeper layers of the mucosa and into the follicles and crypts opening on to the mucosa, the gonococcus would long ago have ceased to exist.

We can reckon with a fair amount of certainty on all the gonococci within an urethra being accessible to antiseptics *only on the first day of the disease*, so that promptitude of action is of the very first importance. Unfortunately, in the very great majority of cases the patient will go on hoping for the best until the discharge has become frankly purulent, and by that time the gonococcus is well out of reach. Our colleagues of the Overseas Medical Services have been pioneers in a widespread endeavour to break down this fatuous optimism of patients by diligent propaganda and have met with a considerable amount of success. I would quote in this connexion Lieutenant-Colonel Raffan, of the A.A.M.C., who has informed me that in a period of six months the 18 abortive treatment centres which the Australian authorities established in this country were successful in aborting over 2600 cases of gonorrhœa. He agrees with Ballenger in expecting 90 per cent. of successes when the treatment commences on the very first day, success meaning complete cure in a week or ten days.

Encouraged by the success of the Colonial medical authorities, I obtained consent in the latter end of last year to the establishment of an abortive treatment centre for Imperial troops in the London district. We have not met with such a high percentage of success as have the Australians, mainly, I think, because practically all the cases on which we have attempted the abortive treatment have been in the second or even third day of the disease. From August last to the end of 1918, out of 738 cases of gonorrhœa which reported at the centre, 129 were considered worth the attempt at abortion. In 69 the attempt failed, and the patients had to be admitted to hospital; in 10 cases the patient failed for one reason or another to complete the period of observation after completion of the treatment, so that it is uncertain whether the attempt was successful or not, and in 50 cases the disease was aborted in a week or ten days. I may mention that in all cases the diagnosis was verified by microscopical examination of the urethral secretion and the cure by examination of the patient a week after cessation of all treatment. As I mentioned, I think that our success would have been considerably greater if our cases could only have started treatment a day earlier, and I have seen sufficient of the abortive treatment of gonorrhœa to urge on you the importance of spreading a knowledge of its possibilities amongst the general public.

Technique.

We have tried many of the plans which have been recommended for the abortion of gonorrhœa, including iodoform bougies, large irrigations with permanganate of potassium, and Ballenger's sealed-in treatment, in which about 20 minims of 5 per cent. argyrol are sealed into the urethra for six hours. The Ballenger method proved fairly successful, but our cases were mostly too far advanced for its application, and our present method is as follows:—

1. The parts are thoroughly disinfected with 1/2000 perchloride of mercury solution.

2. The urethra is irrigated with 1/4000 permanganate of potassium solution, using a two-way nozzle and about two pints of solution.

3. Ten per cent. argyrol or 5 per cent. protosil solution is injected into the urethra and retained for 20 minutes.

This is repeated twice daily for 3-4 days and then the silver compound is omitted, the permanganate irrigation being continued for another 4-6 days. Films of the urethral secretion are examined every other day for gonococci to judge the prospects of success. When the discharge has completely ceased or has become extremely scanty and no gonococci can be found in it after an honest search, the treatment is omitted for a day, and if by the tenth day the urethra seems to be perfectly quiet all treatment is stopped and the patient told to report again in a week for confirmation of the cure. Sometimes he comes back in a few days with a return of the discharge and is then admitted to hospital as a failure. The after progress of patients who have been so admitted has been quite as good as, if not better than, that of patients who were admitted at once, so that the method of abortive treatment which we have adopted does not, like some of the drastic measures which have been advocated, prejudice the cure when it fails in its immediate object. Perhaps a longer period of probation would be a better index of success, but this would involve considerable administrative difficulties, and after all it is unlikely that live gonococci would remain a week in a fresh urethra without setting up acute inflammation.

Some Details of Technique of Local Treatment.

After the disease has passed the stage when abortive treatment is practicable there is some difference of opinion as to whether it would not be better to rely only on general measures rather than to supplement general measures by treatment applied to the urethra. I am bound to say that it would be a great advantage if we could dispense with local treatment, but I have treated parallel series of cases with and without local treatment, and there is no question that those on local treatment cleared up very much quicker. I would also refer you to a paper by Donald and Davidson, who treated two series of 200 cases each, one by local and general treatment and the other by general treatment only. Their experience agrees with my own and that of most genito-urinary surgeons, that in the present state of our knowledge we cannot profitably dispense with local treatment.

There are a few details connected with the local treatment which may be worth discussion, and I should like to deal first with

The Prevention of Secondary Infection.

If one takes the trouble to examine the secretion frequently throughout an attack of gonorrhœa, or, more certainly, if one takes cultures, it is depressing to find how quickly secondary organisms make their appearance, particularly staphylococci and diphtheroids, which are normal inhabitants of the preputial sac. No doubt these organisms are largely saprophytic, but I do not think they are as harmless in an inflamed urethra as they may be in the preputial sac. I have seen numbers of cases of chronic urethritis where diphtheroids and staphylococci seemed to be the only organisms present, and there were good grounds for believing that one or both were responsible for keeping up the irritation. Occasionally, too, one comes across a case where a prostatic abscess has formed years after an attack of gonorrhœa and the pus is packed with staphylococci, and we have good evidence that diphtheroids can set up a particularly intractable form of ulceration of the penis and inguinal region.

In dealing with large numbers of patients, as we have to do in the Army, I have found it particularly difficult to exclude this secondary infection. Circumstances work rather strongly against one's efforts. Those responsible

for the constructional details of irrigation rooms have tended to act on the principle that the arrangements for such a sloppy process as irrigation could most suitably be housed in a wash-house type of place, and once an irrigation room has been built it is pretty difficult to get it altered. Such surroundings must act on the patient's mind and tend to increase his normal carelessness over such details as disinfection of the glans prior to irrigation. Most patients are content to allow a little of the irrigating fluid to flow over the glans prior to insertion of the nozzle, but I have never been able to see the value of a preliminary sluicing with weak permanganate of potassium solution and have tried to institute a more effective system of preliminary disinfection. In the beginning of the war I provided spirit lotion with which to swab the glans thoroughly. Later perchloride or biniodide of mercury lotion was provided, but I am afraid that even in my own hospital there is a great amount of carelessness over this preliminary rite, and unless one, so to speak, makes a drill of it, it is apt not to be carried out. I have brought up the point because the great majority of gonorrhœa patients will have to be treated in public institutions where they will have to irrigate themselves, and unless they are drilled into a habit of preliminary disinfection secondary infection of the urethra is sure to be common. Also it is fairly certain that subsidiary irrigation centres will be established, and it would be well to insist on their internal arrangements approaching the operating theatre rather than the washhouse standard.

Nature and Strength of the Irrigating Solution.

The nature of the irrigating solution and its strength are matters over which there is much divergence of opinion. Before the war I myself experimented with many different compounds, and I have since had the privilege of seeing very many more tried by different medical officers, never having interfered with anyone who wished to try a new remedy, provided that he did not propose something which was obviously dangerous and that he undertook to proceed carefully at first. Amongst others I have seen filtered sea-water, hypertonic saline, eusol, chloramine, and almost the whole range of silver salts, but, almost without exception, medical officers have settled on either one of the flavine compounds or permanganate of potassium, with a weak solution of a silver compound for a variant. At Rochester Row we have tried acri-pro and homo-flavine in different strengths varying from 1/500 to 1/5000 and have supplemented it with an ointment kindly provided by Dr. Browning with a view to keeping up the antiseptic effect. The stronger solutions seem to have been too irritating and most medical officers who are using it now employ a strength of 1/5000, though Davis claims the best results from injection of 1/1000 acriflavine. Our results with the flavine compounds have been very similar to those we have obtained with permanganate of potassium, but we are inclined to think that the permanganate are rather better. Permanganate of potassium solution may be said to be almost the routine irrigating fluid in Army hospitals, not because there is any order about it, but because medical officers have themselves found it to be the most reliable application we have for average cases. The strength of the permanganate of potassium is a matter over which there are differences of opinion. Some prefer to commence with about 1/4000 and increase to as strong a concentration as 1/1000, while others commence with 1/8000 and do not exceed 1/4000 in the later stages.

Advocacy of Weak Solutions.

Personally, I believe in the weaker solutions at first, though I know that the stronger solutions may stop the purulent discharge quicker by their astringent effect. After all, the purulent discharge represents the effort of Nature to cast the gonococcus out of the deeper tissues and from the follicles and crypts which open on the mucosa, and in the acute stages of gonorrhœa one should do nothing which will interfere with drainage. My view is that stronger solutions of permanganate and all definitely astringent solutions when used in the acute stages of gonorrhœa do interfere with drainage, and by doing so promote the formation of peri-urethral infiltrates.

Some time ago, on the strength of Captain Thomson's discovery that gonococci are very soluble in alkali, I suggested a trial of alkaline irrigating fluids. I thought that they might prove more soothing to the mucosa, more destructive of gonococci, and, by their solvent effect, assist drainage.

At first a sufficient amount of sodium carbonate was added to the permanganate solution, immediately before use, to make a 0.75 per cent. solution of the alkali, but this was found to be too strong, and we reverted to a $\frac{1}{2}$ per cent. Dr. Stoker, at the Rochester Row Hospital, has adopted the alkaline irrigation as a routine. He finds that it is more soothing, and there is some evidence that it promotes drainage better in the comparative absence of peri-urethral infiltrates.

Anterior versus Anterior and Posterior Irrigation in Anterior Urethritis.

Genito-urinary surgeons are divided in opinion as to whether in purely anterior urethritis one should confine one's irrigation to the anterior urethra or, after washing the anterior urethra, allow the solution to enter and be ejected from the bladder. It is urged against irrigation into the bladder that the posterior urethra may become infected unnecessarily, and that such complications as epididymitis are much more likely to occur. I should like to advance some arguments in favour of irrigation into the bladder in all cases, whether purely anterior or not. First, it is well known that in a high proportion of cases the posterior urethra becomes infected without any local interference whatever, and posterior infection is not unknown under purely anterior treatment.

Also it is impossible to detect the moment when the infection is implanted on the posterior urethra. Yet it is granted by all that the surest method of preventing infection of the urethra is to wash away the infection as soon after its implantation as possible. I think that on these grounds alone, with the chance of the infection passing to the posterior urethra always present, one should keep it well washed from the first. Then it will be admitted that our object in irrigation is to wash away the irritating discharges and promote drainage from the deeper tissues, follicles and crypts opening on the urethra. I should like for a moment to consider which method is the more likely to effect this purpose. With anterior irrigation the urethra is distended as far as the compressor urethra, and, when the nozzle is removed, the irrigating fluid is forced out of the urethra merely by the collapsing walls of the urethra. It slops out, in fact, and its effect in removing secretion which may be blocking the mouths of crypts and follicles must be very slight. Then consider the effect when the sphincter is persuaded to open and the fluid allowed to enter the bladder. After some ounces have collected in the bladder the nozzle is removed and the patient forcibly ejects the fluid. I think it must be granted that the cleansing effect must be greater; the mere rush of fluid past the mouths of the follicles in this direction must tend mechanically to remove the plugs from them and assist their drainage.

Regarding the risk of epididymitis, there are so many causes of epididymitis that it would be difficult to prove that posterior irrigation was a prominent one. The general incidence of epididymitis in gonorrhœa has been estimated by various authors at anything from 10 to 25 per cent. The experience of military hospitals is that the highest percentage occurs before admission to hospital—i.e., for the most part before any local treatment has been applied. For instance, out of 9797 cases admitted to one hospital which received patients direct from the front 11.7 per cent. arrived with epididymitis, while out of 1000 admissions to my own hospital 14.4 per cent. were suffering from epididymitis on admission.

After admission to hospital the rate varies with different hospitals, and I strongly suspect it has more to do with the amount of work the patients have to do than any other factor. In the hospital which I have just mentioned, where fatigues at one time were very heavy and have since become moderate, the rate after admission of those cases which arrived with no epididymitis has been 6 per cent.; in another hospital where there is a football ground the rate is 8 per cent.; while at Rochester Row, where the patients lead a very quiet life from the point of view of physical exercise an analysis of 268 consecutive cases admitted last year without epididymitis showed that 4, or 1.4 per cent., developed epididymitis while under treatment, and the rate for 1000 cases of 1917 and 1918 has been 2.1 per cent. I admit that irrigation can cause epididymitis, but it is wrongly conducted irrigation, especially irrigation at too high a pressure, but in most cases one can usually find another cause in too hard work, too early prostatic massage, or too early instrumentation.

I believe, then, that the best instrument with which to irrigate the urethra is the bladder, provided that certain conditions are fulfilled. Thus, the anterior urethra should be washed first as well as it is possible to do so with an anterior irrigation and then the sphincter must be *persuaded* to open by a combination of trickery and pressure of irrigating fluid. But the less pressure the better, and with ordinary irrigating tubing and Janet nozzle I prefer the vessel to be 4 rather than 5 feet above the penis.

The Attack on the Gonococcus Through the Blood Stream.

I think that most surgeons who have treated gonorrhoea to any extent must have felt keenly the limitations of local treatment. Until the gonococcus has been cast out of the deeper tissues by natural agencies we have no means of attacking it by local applications. Too often Nature fails to complete her task and we are left with residua of infection which require careful individual treatment to eradicate. Many remedies have been devised to penetrate the mucosa and destroy the gonococcus, but none have yet succeeded, and everyone will admit that if a remedy could be found which, circulating in the blood stream, would directly or indirectly bring about the destruction of the gonococcus gonorrhoea would be a much more satisfactory disease to treat than it is at present. My colleagues and I have experimented with a large variety of compounds, but have so far not found any chemical agent which is a specific for gonorrhoea in the sense of bringing about destruction of gonococci. At one time a very large number of patients under my control were treated with intramuscular injections of mercurial compounds, especially succinimide of mercury, and at first it seemed as if a solution of the difficulty might be found in a mercurial compound. Very frequently the first injection of the mercurial compound was followed by an almost miraculous disappearance of the discharge, and very many cases seemed to clear up very rapidly indeed. On the other hand, relapses were much more frequent than under ordinary treatment and cases which did not clear up quickly seemed to drag on with a chronic gleet much longer than those treated by ordinary methods. Altogether, when the account of about 7000 cases was made up I found we had gained nothing. I should not have pursued this will-o'-the-wisp so long had it not been for the fact that of all the mercurial compounds which I tried the succinimide and camphorimide had the greatest effect and some makes of succinimide of mercury worked better than others, all of which led me to think that by patient research we might arrive at the right combination eventually. I am inclined now to think that the mercurial compounds reduced the discharge by interfering with the reactive power of the tissues, bludgeoning them so to speak. This would account for the slowness of recovery of those cases which failed to clear up at once, though I admit that it does not account for those cases which undoubtedly did clear up in marvellously quick time.

Vaccine Treatment.

Failing a drug or a chemical compound we are left with a more natural method of ousting the gonococcus—viz., increasing the anti-gonococcal power of the patient's tissues by vaccines. Treatment of gonorrhoea by vaccines has appealed to me since in the early days of my closer acquaintanceship with gonococcal infections I witnessed the almost miraculous effect of vaccines I had prepared on cases of gonococcal arthritis. I admit that, in metastatic complications of gonorrhoea, one can obtain excellent results from the injection of a variety of foreign substances into the body, as I shall mention in a moment, but I am convinced that these earlier results of vaccine treatment were not of the same type, and I can attribute them only to the specific effect of the vaccine in increasing the antibody content of the patient's blood. My experience of the vaccine treatment of gonococcal infections has been mixed. For the most part it has been an experience of long periods when one could legitimately doubt whether they did any good at all unless one compared parallel series of cases, vaccine and non-vaccine treated, with one another. These periods were, however, broken by brighter interludes which were repetitions of my earlier experiences when the injection of vaccine was undoubtedly producing excellent effects.

Summing up the whole matter, I concluded that the ordinary gonococcal vaccine is a poor antigen, but that occasionally one hits off a method or happens to use a strain

which results in a vaccine of good antigenic power. The conclusion is not original, since many workers, amongst whom I would mention Eyre, Nicolle and Blaizot, and McDonagh and Klein, have studied to improve the antigenic power of gonococcal vaccines, either by selection of strain or by method of preparation. The difficulty until recently has been to estimate the antigenic power of different vaccines by serological methods. McDonagh and Klein suggested that strains which were good antigens in the complement-fixation test should be selected for use as vaccines, and I think that in the complement-fixation test we have the best means of testing the antigenic power of a vaccine, though not quite in the manner suggested by McDonagh and Klein.

Inquiry in Regard to Gonococcal Vaccine.

When Captain Thomson joined as pathologist at Rochester Row in 1916 I suggested to him that gonococcal vaccine was a subject well worth study. Captain Thomson¹ began by devising a culture-medium on which gonococci grow profusely, and was thus able to command a large supply of gonococcal emulsion for experiment. A further step was made when the method of performing the complement-fixation test by preliminary fixation for many hours in the ice-chest proved to be a great improvement in regard to its delicacy. This improvement was suggested by the work of Mr. F. Griffith and Dr. W. M. Scott, of the Local Government Board Laboratory, who have extensively investigated preliminary cold fixation in the Wassermann test for syphilis. Then Captain Thomson found that the gonococcus is very soluble in alkali, and this has led to improvements in the method of preparing gonococcal vaccines which I hope that Captain Thomson and Captain Lees will have an opportunity of explaining to you. I will not trespass on their territory more than to sum up the matter thus. One may divide a gonococcus into two constituents, stroma and toxin. The toxin has very slight antigenic power in the quantities of it which can be administered with safety, while the stroma freed from its toxin can be administered in such large amounts that a far quicker antibody response is produced than by injection of the ordinary emulsion. Captain Thomson's vaccine is, therefore, gonococcus stroma minus gonotoxin, and is a far better vaccine than any I have yet seen administered. Fortunately for Captain Thomson's investigations he has had the advantage of collaborating with Captain Lees, whose careful observations of the clinical effects of the vaccine have proved of the greatest value.

Nature of Antigenic Effect.

It has been urged in some quarters that the good effects which have been noted in the complications of gonorrhoea as following on the injection of vaccines are not due to a specific antigenic effect but to that non-specific effect which has been termed protein shock, or, as Auld has termed it, pyrogenic therapy by the injection of foreign substances into the blood stream. There is no doubt that pyrogenic therapy is a most valuable aid to the treatment of metastatic gonococcal infections, especially arthritis, and we have a fairly large series of cases now in which the intravenous injection of 120 millions of ordinary antityphoid vaccine has produced most striking improvement. The dose is repeated, or increased to 150 millions, in about five days, and the improvement is proportional to the reaction produced. Very much the same effect is produced by the injection of intramine, but, on the whole, I think that the antityphoid vaccine produces the quicker results. At one time we had half an acute ward on the antityphoid injections and the other half on intramine. They ran one another very closely, and the effect was always proportional to the general reaction. I have not yet tried horse serum, but believe that a similar effect would be produced. I do not think that the good effects we have experienced from vaccines depend on the same principle as protein shock because the new gonococcal vaccine produces little or no general reaction and we have had no good results from intramine or antityphoid vaccine unless a general reaction was produced.

Discussion.

Captain D. THOMSON said that although about 90 per cent. of 200 clinicians who had written on vaccine-therapy in

¹ THE LANCET, 1918, II., 42.

gonorrhoea were in its favour very little experimental work had been done to explain the cause of their success. Using the amount of complement-deviating substances as an index, he had been able to show that antibodies could be evoked in the human by the use of gonococcal vaccine; the serological results obtained were illustrated diagrammatically. He had succeeded in detoxicating the vaccine, thus permitting the use of much larger dosage than had formerly been possible—e.g., 10,000 millions of cocci could be injected without producing more than a slight reaction. The detoxicated vaccines were very successful in inducing the formation of anti-substances. If the complement deviation could be raised to 10 or 12 positive, no cocci were obtainable from the infected source.

Clinical Evidence of Value of Detoxicated Vaccine.

Captain D. LEES, speaking from the clinical point of view, said that he had compared the therapeutic results in five series of cases, each series being specially treated. Those which cleared up first and spent the shortest time in hospital were treated by vaccines. The remaining series in order of therapeutic success were cases treated by mercury for three days and then by vaccines, cases treated by medicine and irrigation, cases treated by mercury alone, and, lastly, cases treated only by rest in bed, without local or general measures. The cases treated by vaccine were characterised by a greater moderation in symptoms, absence of complications, improvement in general condition and mental outlook, less time spent in hospital, and freedom from relapses. Certain groups of cases had been treated by detoxicated vaccines. One such consisted of 12 cases complicated by epididymitis in all of which cocci were found. 2500 million organisms were injected, the dose being subsequently worked up to 10,000 million. The acute cases cleared up very quickly, 1 in 6 days, 1 in 7, and 1 in 15; all have reported regularly since, and with one exception have kept free from infection. Another group was composed of 3 cases complicated by prostatic abscess. On an average the cocci disappeared in 45 days, the discharge in 59, the prostatic enlargement in 62, and the period in hospital was 69 days. Two cases with multiple arthritis and active gonorrhoea were similarly treated; the gonococci disappeared in 4 days, the discharge in 16.5 days, and the joints were normal in 56 days. The prostatic cases stood the treatment less well than the epididymitis cases and showed more focal reaction; in the joint cases there was no focal reaction and the general reaction was slight. A series of acute cases of five to seven days' duration was then treated, and the results were very striking. Comparative results of cases treated by no vaccine, by ordinary vaccine, and by detoxicated vaccine emphasised the value of the last as gauged by the complement deviation, the length of period preceding disappearance of organisms and discharge, and the duration of stay in hospital. With this treatment local reaction was practically absent, focal reaction slight for one day, and general reaction also slight except in one case. Disappearance of symptoms, cocci, and discharge was rapid. No complications developed except slight folliculitis in one case. The clinical results therefore tallied with the serological. He was convinced that the treatment is a valuable adjunct to that usually employed.

Views of Other Speakers.

Lieutenant-Colonel R. BOLAN had critically scrutinised the effect of the treatment by vaccines in a hospital of which he was in charge, and expressed himself as satisfied that the method was the best yet employed.

Captain D. WATSON was in almost complete agreement with Colonel Harrison. With him he favoured urethrovaginal lavage. He had given up all attempts of doing good by internal methods. His experience with vaccines had been varying, and he had seen cases where harm had been caused by their use. In 307 cases of acute gonorrhoea, the average stay in hospital had been 26.8 days. In 222 treated by acriflavine the period was reduced to 21 days. Twenty-six of these were accompanied by complications; in the remaining 196 the average stay was 19.8 days. Six per cent. relapsed. Complications arising in the 222 cases were epididymitis in 2 cases, subacute prostatitis in 2 cases, cystic abscess in 3 cases. The treatment must be continued for 10 or 12 days, although the discharge ceased after 3 or 4. The strength employed had been 1-4000 acriflavine with normal saline.

Captain EDWIN DAVIS, U.S.A., who had worked experimentally with acriflavine, considered that it is worthy of a more thorough trial, for it inhibits growth of gonococci in 1-300,000 dilution, does not lose its power in urine, shows a great tendency to penetrate tissues, and, moreover, is non-toxic and non-irritating.

Mr. CAMPBELL WILLIAMS spoke critically of many of the procedures adopted in the treatment of gonorrhoea, notably the giving of injections with the patient lying on his back, the use of mechanical apparatus for elevating the containing vessel, and the application of a band around the penis. He cited an instance where the disease had been prevented after infection. Relapse was frequently due to reinfection from small glands in the neighbourhood of the frenum, and treatment directed towards them would often avoid it.

Colonel HARRISON briefly replied.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

Pyrexial Symptoms of Malaria.

A MEETING of this section was held on Jan. 28th, Dr. A. F. VOELCKER (Major, R.A.M.C.T.) being in the chair.

Captain GORDON WARD read a paper entitled "Pyrexial Symptoms of Malaria." The object of the paper was to provide guidance as far as might be for those who might be called upon to report (1) as to whether a man showed signs of having recently had an attack of malaria; and (2) as to how far a man was disabled owing to chronic malaria, the existence of which in the case was not denied. It was anticipated that such questions would arise after the war in industrial spheres and before pensions boards. The class of case met with would be quite different from anything hitherto widely known in Great Britain and, to a large extent, very different from the class of case met with amongst inhabitants of a malarial country. The paper was based on observations made on over 1000 cases of soldiers under treatment in hospital. These had contracted the disease in various parts of the world, but were seen only after their return to France or England. Owing to the needs of military service the patients were taking quinine during the period of observation. It was believed that the picture of malaria seen in these circumstances was that which would be met with in civil life for some years to come.

Symptoms.

The following list of symptoms did not profess to be exhaustive, but comprised those most likely to be of value.

1. Pyrexial rigor. A typical malarial rigor with shaking and hot and sweating stages might occur with no rise of temperature. This would not be often met with, but a knowledge that it did occur might prevent mistakes.
2. Herpes labialis was common the day after an acute attack.
3. Headache. This was frontal as a rule, sometimes occipital, almost never vertical. Temporal and frontal headache together were often seen. The patient's statement might often be verified by detecting hyperalgesia at the margins of the area in which pain was felt.
4. Eye signs. Conjunctivitis, photophobia, and nystagmoid jerking were frequent in acute attacks. In chronic cases photophobia, pain behind the eyes, and rarely strabismus, were seen.
5. Pharyngitis and laryngitis both occurred in association with acute attacks, just as they did in influenza and many other fevers.
6. Jaundice. Some people seemed especially prone to jaundice after attacks of malaria. A slightly yellow colour was suspicious in chronic cases.
7. Perisplenitis. A friction rub (lasting three to five days) might be heard over the spleen in a few cases.
8. Pain in the side. This might be due to pleural adhesions. If so, it was felt most on deep inspiration, and a course of deep-breathing exercises would often dispel it. It might be due to splenic adhesions when more complaint was made when the patients stood for long or took much exercise. These two occurred in chronic cases, and both were often due to malaria, the former, of course, indirectly. Pain in the side might also depend on hyperalgesia of the skin or muscles. It was then at times bilateral. This was frequent in acute cases.
9. Tremor. A fine tremor of the tongue and hands, rarely of the lips, was common. It might persist in chronic cases, and was then often associated with chronic headache and depression.

10. Pigmentation. At times pigmentation was seen to increase with attacks and diminish between them; this was a good but rare sign.

11. Tachycardia was common when the patient first got out of bed, and might persist or only be elicited on exertion.

12. Hyperidrosis. This was not infrequent, although not often complained of. Occasionally it was so severe as to constitute a serious disability.

13. Splenomegaly. This was an uncertain sign in cases such as those under consideration. It occurred in indisputable form in severe attacks and when jaundice also was present.

14. Transient oedema. Local swellings of the nature of giant urticaria were sometimes seen on hands or legs; they lasted a few days only.

15. Raynaud's symptoms. "Dead fingers" and feet were often seen.

16. Weakness was often complained of, but was hard to assess. With the patient under observation it could be done by various tests, but must, as a rule, be a matter rather of opinion than demonstration.

17. Blood changes. The presence of the parasite was definite evidence. The presence of an increased number of "mononuclears" was of no value. A fall in hæmoglobin always needed explanation, but was not necessarily due to malaria. An increase of eosinophils was suggestive of malaria, as also was the presence of endothelial cells. The total number of white cells was of no particular value in diagnosis. The presence of abnormalities of the red cells, such as polychromasia, anisocytosis, and megalocytosis, was important and strongly suggestive of malaria.

In addition to the above, transient hemiplegia had been seen. Leg pains similar to those of trench fever were to be expected in a certain proportion of cases. Purpura was rare in the class of case dealt with. Urticaria and mastitis and a specific rash had been noted by some writers. Sudamina were not rare. Albuminuria would be of importance, but there was no opportunity of inquiring into the point.

Discussion.

Colonel ANDREW BALFOUR spoke of the relapses as probably indicating sporulation in internal organs. He agreed as to the occurrence of apyretic rigors, which usually merged later into more definite pyrexial relapses. It was questionable as to whether the rectal temperature would also have been found to be normal. If the thick film method of examination had been used the chances of finding parasites would have been increased. He raised the question of hepatic tenderness after malaria, a sequel which he thought not uncommon. It was difficult to state definitely that all the symptoms were malarial in origin.

Dr. F. S. LANGMEAD deprecated the common fault of ascribing all symptoms occurring in people coming from a malarial country, or even in malarial subjects, to the malaria itself. A more patient examination would sometimes show that a patient who was regarded as suffering from an unusual form of malaria was really the subject of an independent or secondary infection. Despite this warning, he agreed that malaria was almost as protean in its manifestations as Captain Ward had declared. He had had facilities for observing about 10,000 cases of malaria, and agreed as to the occasional occurrence of rigors without fever. Such rigors were frequently accompanied by malaise, headache, sweating, rapid pulse, mental depression, and even by vomiting. Cases had been seen of all degrees, ranging from those with rigors without alteration of temperature, through those with rigors where the temperature only attained the normal line, and those where the rigor was associated with a very slight pyrexia, up to those with characteristic pyrexial attacks. Pigmentation might be so severe as to resemble that of Addison's disease, and with this he associated also cases with temporary or persistent low blood pressure and small pulse, possibly ascribable to suprarenal defect. Defective action of this gland and also of the thyroid was suggested by the tachycardia, tremor, and exophthalmos which had been referred to and which certainly occurred. He had come to regard tachycardia in malaria as occurring in three clinical forms: (1) a transient form abating with or soon after an attack; (2) a more persistent form which subsided after several days or weeks; (3) a chronic and protracted form which possibly would remain permanent. It was difficult to say when the last two forms were indications that the malaria was merely in abeyance. Statistics as to the efficacy of various forms of treatment in preventing relapses were unreliable, as what constituted a relapse was often decided by rule of thumb and apyrexial attacks were not considered.

Dr. J. A. ARKWRIGHT spoke of the presence of urobilin in the urine as a valuable help in diagnosing malaria in the absence of a paroxysm.

Captain WARD briefly replied.

TUBERCULOSIS SOCIETY.

Practical Remarks on Tuberculosis in Relation to the Upper Air and Food Passages.

A MEETING of the Tuberculosis Society was held at the Royal Society of Medicine on Jan. 27th, under the presidency of Dr. HALLIDAY SUTHERLAND.

Dr. DUNDAS GRANT in a lecture on the above subject touched upon most of the conditions which tax the resources of the tuberculosis officer and the medical officers of sanatoria and hospitals. Many of the forms of treatment of tuberculosis of the larynx are only suitable for the specialist, but Dr. Dundas Grant gave an optimistic review of the results obtained by the simpler methods. Attention was called to rest to the larynx by silence and the voiceless whisper, much improvement occurring in the voice and condition of the vocal cords in a few weeks. Although a "useful" cough was to be permitted, many coughs by patients were useless and injurious. Much of this injury might be avoided by the voiceless cough practised without closure of the vocal cords. Continuous inhalation, advocated by Dr. Burney Yeo and Dr. David Lees, was referred to, but Dr. Dundas Grant considered its value chiefly due to relief of cough and not to any bactericidal effect. He recommended the following inhalant:—

Creasot. ... 3III.
Ol. pini sylvest., spir. chlorof. ... aa. Siss.
Ol. cinnamon., ol. citronell. ... aa. mv.

With menthol gr. v., gradually increased unless found irritating.

Nasal obstruction and nasal catarrh had a markedly detrimental effect upon laryngeal disease, and he said that these conditions should receive full attention. The use of a simple alkaline and antiseptic nasal lotion, employed with the aid of Grant's inspiratory nasal douche, of the following formula was often followed by very good results:—

Sod. biborat. ... gr. xvi.
Sod. chlorid., sod. salicylat. ... aa. gr. xlviii.
Glyc. pur. ... m. lxxii.
Aq. menthol. ... ad 3 vi.
A teaspoonful to the ounce of warm water.

In local conditions with great pain removal of portions of the epiglottis or the aryepiglottic fold had frequently to be performed, but in a great measure these procedures were obviated by the use of the galvano-cautery, the results in disease of the larynx, tongue, and nose being most gratifying. In this connexion inhalation of orthoform and anaesthesia by means of Leduc's powder inhaler, which the patient could learn to use by himself, was advocated and described. Dr. Dundas Grant said that the injection of alcohol into the superior laryngeal nerve to produce complete anaesthesia might with a little practice be accomplished with fair precision, affording great benefit. In concluding he mentioned the treatment of enlarged tonsils and adenoids, the remote effects of which were of such importance in the chest disease of the child.

SOCIÉTÉ DE BIOLOGIE, PARIS.

THE following is a summary of some of the papers read at the meeting of the society held on Jan. 25th:—

P. PORTIER.—Development of Larvæ on Sterile Food.

L'auteur a observé le développement complet des larves de *Tenebrio molitor* obtenues au moyen d'une nourriture stérilisée à haute température (130°). Les animaux dans ces conditions sont approvisionnés de symbiotes par un mécanisme spécial (cryptogames ou micro-organismes inclus dans leurs tissus) qui s'y développent et échappent à la carence.

MICHEL SIEDLECKI (Cracow).—Remarks on the Terrifying Attitude in Animals.

A propos de ce qu'on appelle "la position terrifiante" des animaux, 1° La position de bataille et celle qu'on appelle terrifiante ne sont pas les mêmes. 2° Très souvent la position terrifiante n'a pas de valeur pour la défense de l'animal. 3° La position terrifiante peut être provoquée non seulement par la présence de l'ennemi au voisinage de l'animal, mais aussi par différents autres agents, soit la fatigue, soit en général une irritation de tout l'organisme.

Dr. BONNEFON.—R-generation and Revivescence.

"Régénération" n'égale pas "reviviscence." Les éléments cellulaires morts sont remplacés par des cellules étrangères au greffon. Il y a donc régénération et non reviviscence. Quant à la trame connective du greffon qui sert de canevas à cette régénération, elle n'a pas à mourir, ni pas conséquent à survivre ou revivre puisque c'est un "coagulum inerte." Elle ne peut qu'être assimilée. Tous ces faits ont été établis et interprétés au cours des recherches d'avant guerre sur la greffe de la cornée.

L. LAUNOY —Antagonistic Action of Blood Serum against Bacterial Proteases.

Il résulte de ces recherches que pour des actions protéolytiques qualitativement égales, l'action du sérum sanguin est beaucoup plus faible sur les protéases microbiennes que sur la trypsine. D'où l'auteur conclut que l'interprétation qui fait du pouvoir antitryptique du sérum un phénomène banal, est incompatible avec les faits. D'autre part, l'auteur a obtenue par l'injection au lapin de protéases microbiennes l'apparition dans le sérum de propriétés inhibitrices très énergiques. Ces propriétés inhibitrices sont spécifiques pour la protéase injectée.

A. GRIGAUT, A. RANQUE, et Mme. POMMAY-MICHAUX.—Measurement of Bacterial Proteolysis.

Les différents microbes de la plaie de guerre, ensemencés sur le milieu à l'œuf, déterminent une protéolyse plus ou moins abondante dont la marche peut être suivie commodément au moyen du procédé de nœudisation décrit par les auteurs. Le dosage de l'azote non protéique notamment permet d'apprécier le taux de la protéolyse dans un milieu de culture déterminé et de mesurer l'activité protéolytique comparée des différentes espèces ou associations microbiennes.

F. CHEVREL, A. RANQUE, CH. SENEZ, et E. GRUAT.—Vaccine Therapy in Influenza.

Les injections intraveineuses de vaccin pneumo-streptococcique iodé parfaitement toléré, ont amené des décolorations brusques avec guérison dans de nombreux cas à complications pulmonaires graves. Dans les septicémies à streptocoques le vaccin n'a pas donné de résultats appréciables; par contre dans les septicémies à pneumocoques, la vaccinothérapie a donné des résultats excellents.

Reviews and Notices of Books.

Training and Rewards of the Physician. By RICHARD C. CABOT, M.D. London and Philadelphia: J. B. Lippincott Company. 1918. Pp. 153. 5s. net.

THE title of Dr. Richard Cabot's work is somewhat of a misnomer in that the book says not much about the studies and curriculum of a medical school. One admirable point in the work is the insistence with which Dr. Cabot urges the necessity for the physician being trained to understand his fellow men, seeing that patients are not merely "cases," but human beings with their own very real troubles and limitations. We must take exception to Dr. Cabot's statement on p. 45 that the physician,

"during his experience as a hospital interne tends to discard whatever he had known of human feelings, fears, delicacies, aspirations, and especially to ignore the differences of individuals and their need of individual treatment the young doctor at the end of his internship is often more nearly dehumanised than at any period in his life—before or after his hospital year."

We cannot think that this is strictly true; in our experience a year's work as a house surgeon or house physician in a big hospital will teach a man more about his fellow men and their needs than he would learn in the same time in almost any other work.

Dr. Cabot lays stress upon an important point which the ordinary public is in danger of forgetting and which many medical men do not realise, and that point is that nowadays the main work of the medical profession is devoted to doing away with illness—i.e., its own professional source of subsistence. While writing on this subject he quotes from a letter written by a patient suffering from tuberculosis who mentions that in June, 1903, he consulted a

"physician regarded as eminent in his profession and a man of long experience. I had then lost about ten pounds in weight. He examined me carefully, examined my sputa, found tubercle bacilli"

The patient continued to lose weight—namely, 8 lb. more in three weeks—and continued under the care of the physician until August, during which time "nothing was said to me in regard to outdoor living." He then read an article on open-air treatment in a popular magazine and, after consulting another physician, tried it together with rest, and recovered. Dr. Cabot quotes this incident as an example of the good which may be done by articles on medicine in the lay press. Such articles may, as in the above instance, do good, but they often do harm, and we must express surprise at a physician "regarded as eminent in his profession and a man of long experience," who, moreover, knew about tubercle bacilli, being either ignorant of, or

incredulous as to the benefits of, open-air treatment so recently as the year 1903. Public experience had made the value of open air public knowledge years before—in this connexion we may note that one of the earliest references in the lay press to the benefits of open-air treatment appeared in Lytton's "Strange Story," first published in 1862, while Reade used the same incident in "Foul Play" a few years later. A fine chapter in Dr. Cabot's book deals with the rewards of the physician. What these are we must leave to readers of the work to find out; we will merely quote Dr. Cabot's last sentence. Of the practice of medicine he says: "Its rewards, as I see them, are beyond those of any other profession."

United States X-Ray Manual. Authorised by the Surgeon-General of the Army and Prepared under the Direction of the Division of Roentgenology. New York: Paul B. Hoeber. 1918. Pp. 506. \$4.00.

THIS volume supersedes the small manual hurriedly prepared at the beginning of the war and is to serve as a guide to radiologists taking up military work, as well as a textbook for those without previous X ray experience. It is in consequence a very complete and concise treatise on the whole subject of X ray diagnosis, prepared with much care, containing numerous illustrations and diagrams which remove all ambiguity with an absence of superfluous verbiage. While, naturally, military practice predominates the line of demarcation between this and civil practice is really a very narrow one and the fundamental principles are the same. It is thus not too much to say that as a textbook for those who aim at proficiency in X ray diagnostic methods this would be hard to beat.

Every branch of the subject is treated as fully as the occasion demands, neither too much nor too little, and it is unnecessary to pick out any section for special comment. Great praise is due to those responsible for its production, not omitting the publisher, whose work is exactly suited to a book of this kind.

The Chemistry of Synthetic Drugs. By PERCY MAY, D.Sc. Lond., F.I.C. Second edition, revised and enlarged. London: Longmans, Green, and Co. 1918. Pp. 250. 10s. 6d.

THE progress that has been made in this country since the war in the production of synthetic drugs, formerly confined to Germany, adds considerably to the interest of this volume, now brought to a second, revised and enlarged edition. It is good to learn from an authority like Dr. May that though the manufacture of synthetic organic chemicals on a large scale presents many difficult problems, yet most of these have been successfully overcome by British chemists in so short a time; but he rightly points out that these successful efforts some day will come up against the vast and highly organised German organic chemical industry. That will present a problem which it will be the duty of our fiscal authorities to solve, but there is another point to be remembered. There can be little doubt that it would be an advantage if many of the synthetics were ruled out so far as regards therapeutics. As this book shows, it is not difficult to modify the structure of many compounds and to build up by the substitution of groups an extensive series of products which have a commercial impulse behind them rather than a pharmacological interest. Mainly addressed to the chemist who may not happen to know the exact chemical nature of these preparations, the book nevertheless affords attractive reading to medical men, who may thus trace the relationship of constitution (groupings) to therapeutic action.

Stoichiometry. By SYDNEY YOUNG, D.Sc., F.R.S. Second edition. With 90 figures in the text. London: Longmans, Green, and Co. 1918. Pp. 362. 12s. 6d.

THE not very elegant word "stoichiometry," the title of this book, implies a study of the laws governing chemical combination and their application to chemical calculation. This study involves a consideration of atomic values, according to latest determinations, of the functions related to these values, the properties of the different forms of matter as we know it, the solid, liquid, and gaseous states, the properties of all three states, their behaviour to one another, as in the solubility of gases and solids in liquids,

absorption, adsorption, and so forth. These subjects form the conspectus of the ground traversed by Professor Young, who has devoted himself to theoretical questions with the thoroughness and detail which have characterised his studies since the early days of his professional career. The practical importance of his work is revealed throughout the pages of the book, wherein the painstaking labour of investigators is revealed in sequence since the classic work of Stas (1831-1891), who, in spite of relatively simple facilities, obtained values so accurate that to this day they are retained as representing the truth as near as we can reach it by modern knowledge. It is of interest also to remember that Stas laid the foundations of the methods employed to the present day in the separation and identification of alkaloids. Professor Young has made a very important addition to a valuable series of text-books of physical chemistry, first issued under the editorship of the late Sir William Ramsay.

Introduction to Inorganic Chemistry. By ALEXANDER SMITH. Third edition, rewritten. London: G. Bell and Sons, Ltd. 1918. Pp. 925. 8s. 6d. net.

Professor Smith's teaching experience at Columbia University, where he is a professor of chemistry and administrative head of the department, has led him to try how best to open his subject to beginners, whether at university, college, or school. He makes the study of chemistry of interest from the start by coupling with the reading of this book a systematically arranged course of laboratory work in general chemistry, and the early chapters contain a discussion of a few typical experiments which bring before the student's consideration the manifold and broad questions with which chemistry deals, and the real purpose of its study. The theoretical portions are clearly written and well sustained by practical illustrations. This third edition is brought up to date, as evidenced in the chapters on dissociation, ionisation, and the modern methods of writing formulæ expressing reversible reactions.

There have been issued also two further books by the same author and publishers. One, *A Laboratory Outline of College Chemistry* (pp. 206, 3s. net), and the other, *Experimental Inorganic Chemistry* (pp. 170, 3s. 6d. net), which both form excellent guides to practical work in which particular attention is given to those details which, when instructions are followed, carry experiments to a successful issue and ensure accurate training.

Veterinary Post-mortem Technic. By WALTER CROCKER, B.S.A., V.M.D., Professor of Veterinary Pathology, University of Pennsylvania. With 142 illustrations. London and Philadelphia: J. B. Lippincott Company. Pp. 233. 16s. net.

As stated by the author in his preface, "the scientific study of pathology without proper post-mortem technic is impossible," and it is with a view to describing to the student the proper way to make a post-mortem examination that books of this kind are written. Veterinary literature has not been enriched by many books upon this subject, and Dr. Crocker's work should certainly be welcomed by many readers. It describes in full detail all the particulars necessary for exposing the important organs to be examined in cases of death from any special (or, indeed, any ordinary) disease, and the illustrative plates are excellently made, so that with these and the text no student can possibly go wrong.

The descriptions are a little American in style, and occasionally the expressions strike an Englishman as not being quite those he has been used to in student days, but they are very clearly put, and autopsies of all kinds of animals and birds are fully detailed. It is a book particularly useful in these days where even the ordinary practitioner is called upon to find certain hidden glands in order to obtain microscopic preparations from them and otherwise examine them. The clinical practitioner is apt to forget their exact locality, and as some are quite small he has difficulty in finding them. From such a book as this for reference he can obtain all the help and guidance he needs, and a most useful chapter is given on the average measurements and weights of organs. The book should be bought; if it goes too fully into small details the fault is on the right side. The author deserves every praise for a work which will be of real use to the veterinary profession.

JOURNALS.

British Journal of Children's Diseases. Vol. XV., October-December, 1918. Edited by J. D. ROLLESTON, M.D.—In their article on Ruptured Aortic Aneurysms in Childhood Dr. E. Bronson and Dr. G. A. Sutherland record a case of death due to the rupture of a fusiform aneurysm of the ascending arch of the thoracic aorta in a boy aged 5 years and 10 months. The aneurysm apparently followed a partial stenosis of the aorta between the insertion of the ductus arteriosus and the left subclavian artery. That this structure was a congenital anomaly was supported by the presence of a diaphragmatic hernia, subluxation of the joints, and defective cranial development. The writers classify aneurysms in childhood into (1) arterio-sclerotic; (2) traumatic; (3) embolic or septic; (4) false due to erosion from without; (5) due to congenital anomalies. The present case was an example of the last group. Two other instances on record of aneurysmal dilatation due to partial stenosis of the aorta are summarised, as well as five cases of aneurysms apparently due to congenital anomalies in the structure of the ductus arteriosus. In two of the latter rupture caused death. The writers have found in the literature seven reports of death following rupture of thoracic aortic aneurysms in children, one case of rupture of the aorta without aneurysm, and two cases of aneurysms of the abdominal aorta. A complete bibliography is appended.—In an article on the "Food Deficiency" or "Vitamine" Theory in its Application to Infantile Beri-beri, Major F. M. R. Walshe summarises the present state of our knowledge of beri-beri as follows. Beri-beri is dietary in origin in that it is associated with a physiologically inadequate diet. Yet the purely negative vitamine-starvation explanation of its pathogenesis, apart from the inadmissible nature of its contained assumption that a disease which clinico-pathologically is clearly an intoxication could be *solely and directly* caused by the mere *absence* of anything from the food, is inadequate in that it does not recognise the existence of the two factors essential to the production of the disease. These two factors are: (1) the absence of an unknown accessory factor or vitamine; and (2) the consumption of carbohydrates.—In a note on Abnormal Naughtiness in Normal Children, Dr. John Thomson points out that cases of this kind are essentially of the same nature as those of "moral imbecility" in children who are to some degree mentally defective. The proper treatment is as follows: (1) all severe corporal punishment must be stopped—it never does any good; (2) nobody must ever appear shocked, amused, or even surprised at anything the child does; (3) his misdeeds are never to be alluded to in his presence; and, lastly, he should be noticed and encouraged in every way when he is good, and altogether ignored when he is naughty.—Dr. Reginald C. Jewsbury records a case of Muscular Spasm in a Child, which Dr. F. Parkes Weber, in his remarks on the case, shows is the first example published in England of "Dystonia Musculorum Deformans" (Oppenheim) or "Progressive torsion spasm of childhood." The present case is exceptional in that hitherto the disease has been described only in Russian, Polish, and Galician Hebrew families. It runs a chronic progressive course with intermissions and even with periods of improvement, and may then come to a standstill, other portions of the nervous system remaining unaffected. It is characterised by a peculiar mixture of hypertonus and hypotonus of the affected muscles. The face and muscles of articulation are usually not affected except in late stages, when there is involvement of the muscles of the neck. Among the earliest symptoms is partial or total loss of function of one or more extremities due to faulty tonus innervation. Talipes tends to persist. The movements of the affected parts are spasmodic, but not truly athetotic. Psychical symptoms may occur, but the mental condition is generally normal.—The abstracts from current literature deal with diseases of the alimentary canal, surgery, orthopaedics, and ophthalmology.—The very full index contained in this issue should be an invaluable guide to current paediatric literature.

Journal of the East African and Uganda Natural History Society. No. 13, November, 1918. London: Longmans, Green, and Co. Price, to non-members, 5s. 4d.—Among the contents of this issue is an article by Mr. A. Blayney Percival on Game and Disease, in which the author develops his view that Nature has her own methods of preventing the spread of disease among wild animals, while at the same time she utilises disease as one method of ensuring the survival of the fit. Ngar naria he identifies with anthrax, and states that the Masai recognise the disease as one which man may contract. The Masai's treatment of the human patient is to promote perspiration by wrapping him in the freshly stripped warm hide of an animal, at the same time depriving him of all milk, giving him to drink only a decoction of a native root. In British East Africa, according to the author, both game and cattle have developed to some extent immunity against rinderpest, while the wart-hog has failed to do so.—In his notes on East African snakes Mr. A. Loveridge shows

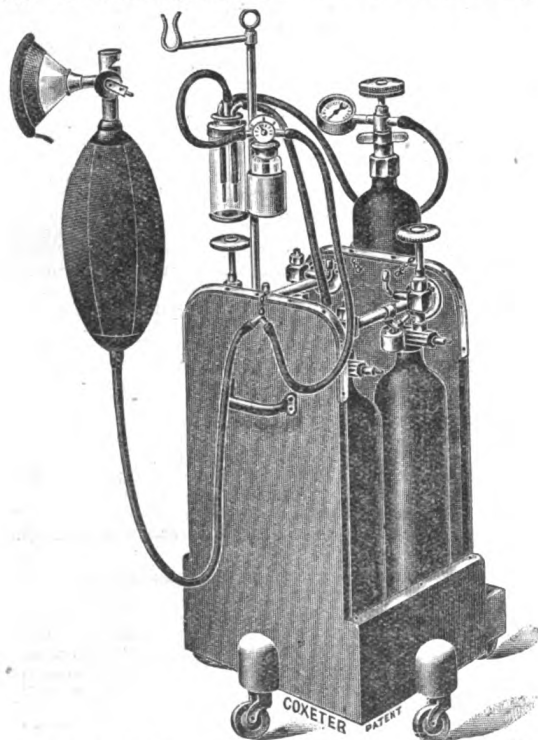
that there is no easy criterion for distinguishing between poisonous and harmless species, variations in colour and shape of head being inconclusive.

La Medicina Ibero (Madrid, weekly) has now entered on its second year of publication, and may be congratulated on having won for itself a distinctive place among Spanish medical journals. Its abstracts of articles in Spanish, British, French, and American periodicals are a prominent feature and are excellently done. In the number before us—that for Dec. 28th last—Dr. Encinas abstracts the Spanish and Dr. Zapata the foreign journals. It is not easy to make abstracts interesting, but both writers have succeeded in doing so, thanks to an easy and lucid style and a sure judgment for salient points. Original articles are contributed by Dr. Villaverde and Dr. Alvarez. The former writes on "Spasm of the Orbicularis Palpebrarum and the Cervical Muscles," and discusses an interesting case in which bilateral orbicularis spasm, leading to almost complete closure of the eyelids, and causing the patient to throw his head back in order to see through the narrowed palpebral aperture, was followed, after a time, by a tonic contracture of the cervical muscles, fixing the head in the position at first adopted voluntarily. The case is of special interest in that the electrical reactions of the facial nerve were perfectly normal and that of the muscles supplied by the facial nerve, none but the two orbicularis muscles were affected in the slightest degree.—Dr. Alvarez writes on Milk as a Vehicle for Iodine. His article is a somewhat enthusiastic plea for a wider use of free iodine in therapeutics as against the mineral iodides, and for milk as the vehicle *par excellence* for its administration.

New Inventions.

NITROUS-OXIDE-OXYGEN-ETHER OUTFIT.

THE accompanying illustration depicts one of the patterns of the above machine. The main points are: (1) each cylinder is provided with a fine adjustment reducing valve (the valves are so constructed that they can be fitted to any ordinary English cylinder); (2) the principle of the "sight feed" has been adopted; (3) there is a small spirit lamp for



warming the reducing valve to the nitrous oxide cylinder; (4) a pressure gauge is attached to the oxygen cylinder; (5) a small rebreathing bag is attached, together with an ordinary 3-way stopcock and face-piece; (6) an ether bottle is connected up in the circuit; (7) the machine has been made in three sizes:—(a) The large size for work abroad. This machine, when fully charged, takes 4 cylinders of

200 gallons, 2 of 500 gallons, and 1 of 40 ft. capacity for oxygen. (b) The next size—the one depicted here—is meant for work in hospitals at home, and carries 4 cylinders of nitrous oxide of 200 gallons each, and a 20 ft. cylinder of oxygen. Types (a) and (b) are on wheels, and can easily be moved about. (c) The size for private practice takes 4 cylinders of 100 gallons, 2 of nitrous oxide, and 2 of oxygen. Cylinders of 25 or 50 gallons capacity can be used with this pattern. This type is so devised that the stand carrying the "sight feed" bottle and the ether bottle can easily be dismounted and securely stowed away between the cylinders. There is a covering lid and carrying handle.

These machines are economical in consumption of gas. 80 gallons of nitrous oxide and 20 gallons of oxygen are usually enough for one hour's continuous anaesthesia. I have now completed over 2000 personal administrations with this method, and am able to record over 1600 administrations by Captain Trewby and the residents at the 1st London General Hospital, making a total of over 3600 cases without any fatality. I desire to thank Captain Geoffrey Marshall, R.A.M.C., for many and valuable suggestions with regard to what was, or was not, required for use with this machine in France.

H. EDMUND G. BOYLE,

Captain, R.A.M.C. (T.); Anaesthetist to St. Bartholomew's Hospital.

A MODIFIED BUCHNER'S ANAEROBIC TUBE.

THE advantages claimed for this method are: (1) Simplicity. No special apparatus is required. (2) Tubes are shorter and less cumbersome than ordinary Buchner's tubes. (3) Economy of materials, which are readily obtained and are portable and compact. (4) Good anaerobiosis is secured. (5) Any medium can be used for cultivation.

The requirements are:—

1. A strong glass test-tube 6 inches long with an internal diameter of $7/8$ inch and a well-fitting rubber cork of 1 inch diameter.
2. The medium tube, containing liquid or sloped solid media of any kind, of a length of 5 inches, with an internal diameter of $7/16$ inch.
3. Four leaves of ordinary thick blotting-paper cut to a size of 4×3 inches.
4. Pyrogallie acid powder 1 g.
5. Caustic potash solution 16 c.cm. (Stock solution 109 g. caustic potash dissolved in 145 c.cm. water. Diluted 1 in 4.)

The conditions requisite for good absorption of oxygen in a vessel by alkaline pyrogallie acid solutions are: (1) large surface area of pyrogallie acid solution: (2) small air space containing the oxygen to be absorbed. These conditions are obtained in the manner shown in the accompanying diagram.

Method of use.—The dry pyrogallie acid powder (1 g.) is placed in the bottom of the outer tube. The four layers of blotting-paper, between the layers of which a little pyrogallie acid powder is placed, are wrapped round the medium tube, the long axis of the paper in the long axis of the tube. Medium tube and layers of paper are then slipped into the outer tube. (Outer tubes can be kept ready for use containing the blotting-paper layers and pyrogallie acid powder.) The caustic potash (16 c.cm.) poured into the outer tube, and the medium tube is rapidly slipped into the centre of the paper cylinder. As the medium tube is pushed in, the alkaline pyrogallie acid solution mounts as a thin layer between the outer tube and the medium tube to within a short distance of the top of the latter and drives out the air from the outer tube, thus reducing the amount of "dead space" from which oxygen must be absorbed. The rubber cork is pushed tightly into the mouth of the outer tube, the rim of which is sealed with paraffin wax. The layers of blotting-paper absorb a portion of the fluid and give to the absorbed pyrogallie acid solution a large surface area for the absorption of oxygen. The medium tube is suspended in the pyrogallie acid solution.

That good anaerobiosis is obtained is indicated by the fact that a tube containing 5 c.cm. of ordinary 1 per cent. glucose broth containing a solution of methylene blue or litmus is rendered quite colourless in 24–48 hours. Litmus milk tubes are also decolourised. The tube should, however, be left 2–3 hours to allow oxygen absorption to take place before incubation. Good surface growths of anaerobes with discrete colonies have been readily obtained on human serum glucose agar medium by this means.

H. J. B. FRY, M.D. Oxon.,
Captain, R.A.M.C. (T.F.).

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting will be held to-day (Friday, Feb. 7th), in the society's rooms, West London Hospital, when cases will be shown at 8 P.M.



THE LANCET.

LONDON: SATURDAY, FEBRUARY 8, 1919.

The Medical Aspects of Flying.

ELSEWHERE in our columns we publish two papers which, although dealing primarily with the aeronautical side of medicine, are capable, in our opinion, of wider application. Dr. LOUIS STAMM describes a new form of reaction time apparatus which in his hands has proved of great value in assessing the mental qualities of flying pupils. It is true that with the coming of peace its application for the selection of officers appears to be somewhat curtailed, since the necessity for differentiating temperamentally the various types of pilots is no longer a matter of urgency. Indeed, for commercial purposes the good, steady, bombing pilot, or the unperturbed artillery observation officer, will possibly be looked upon with greater favour than the "star" of great stunting and fighting propensities. Nevertheless, in times of peace such an apparatus could undoubtedly be profitably used in the selection of airmen, and will probably prove of value in elucidating nervous conditions associated with "flying strain." Dr. STAMM attaches great importance to the more elaborate tests, and believes that these are of considerably greater value than the simple reflex times which can also be recorded. In view of the work done by Professor NEPPER and others on these simple reflexes, and the considerable importance attached by the French authorities to such tests, it will be interesting to see if the work of others confirms this opinion. It appears too soon to discard such simple tests altogether, and the matter must be investigated more fully. Apart from the examination of airmen or would-be candidates for aviation, it appears that the tests of Dr. STAMM are likely to be of considerable value in the examination of cases of shell shock, neurasthenia, hysteria, and other allied nervous conditions, and might profitably be worked in conjunction with "emotive" observations on the psycho-galvanic reflex.

The second paper, by Lieutenant-Colonel MARTIN FLACK, is in some ways of more immediate importance. With the coming of commercial aviation it will be a matter of supreme importance that only fit pilots are allowed to take passengers into the air. It will be particularly desirable that no pilot shall be liable to any breakdown which may endanger the lives of those entrusted to his care. Since all the tests described in the paper have had the normal standards set by observations upon successful flying officers, it appears to us that tests such as these should be employed in the examination of peace-time pilots. If properly carried out, the results of such simple tests will convey a fund of useful information to a medical officer called upon to examine airmen, and by a comparison

with results previously obtained an opinion will be formed as to the manner in which the subject is standing the strain of his occupation. The treatment of "flying stress" is essentially a preventive treatment, and careful examination along the lines suggested should be especially fruitful in preventing the onset of undue fatigue. It will give early indications of the need for rest on the part of the subject and prevent the bold and intrepid airman taking the air when, as not infrequently happens, he is not altogether in a fit condition to do so. Besides being of value from the point of view of the selection of the flying officer, we understand that the tests have proved of considerable value in assessing the effects upon the individual of what may be termed "minor crashes."

Apart, however, from their value in relation to flying, it appears to us that the tests will ultimately be found to be of wide application. With suitable modifications and appropriate standards they may be introduced into the various medical examinations in which the aim is to obtain an idea of the physical efficiency of the subject. In the past the physician has frequently concentrated his attention on the study of the abnormal, and has not assessed the normal at its true value. In a similar way the physiologist, while studying the more abstruse problems of the healthy body, has tended to overlook the value of such simple tests in estimating its efficiency. We believe that the simplicity of these tests will appeal to many and will serve to strengthen the bond of service which should exist, but too frequently does not, between physiology and medicine. Thus far in science there has been too much work in watertight compartments and insufficient liaison between the various branches. It is to be hoped that the time has now come when a close relationship will be maintained among the various scientific allies whose duty it is to make for the building up and preservation of the efficient state.

The Teaching of Medicine.

THERE are manifestations just now of a greater interest in medical education than has been known for a generation, and of a widespread conviction that reform is imperative. It is satisfactory to find that the monograph of Sir GEORGE NEWMAN, whose views must be of great practical value at this juncture, has stimulated thought and discussion on a complex and difficult question. In Scotland, as well as in England, the same interest is being evinced: the Edinburgh Pathological Club, for instance, has recently debated two papers by Mr. J. W. CRERAR and Dr. D. E. DICKSON on the Training of Medical Students for General Practice,¹ wherein the existing curriculums are closely scrutinised. The arguments in these two papers are not always directly applicable to English schools, but the defects of medical education in Edinburgh, as expounded at the Pathological Club meeting, are generally similar to those perceived by English educational authorities to be present south of the border. In some respects, however, changes advocated by English authorities have been inspired by a desire to bring English methods of teaching to a nearer approximation to Scottish practice.

Sir WILLIAM HALE WHITE is a consultant physician of unrivalled authority and experience as a teacher of

¹ Edinburgh Medical Journal, December, 1918, p. 350, et seq.

clinical medicine. His summary of the problem of post-graduate medical education in our columns on Jan. 4th includes principles which command universal assent, but when he comes to his own province of "primary" education in clinical medicine he becomes at once more detailed and more definite. He goes right to the heart of one of the difficulties of the medical reformer in London: the fact that the material rewards of moderately successful consulting practice are enormously greater than such emoluments as even the best and most hard-working of medical teachers can expect. This is a difficulty which is more acutely felt in London than elsewhere, in marked contrast to Edinburgh, which suffers less than many other schools from this disturbing factor. Sir WILLIAM HALE WHITE would forbid the chief of a medical clinic to engage in private practice, whether as physician, surgeon, or obstetrician; and if the salary of such a professor, as he would be called if any semblance of a chair were found for him, were large enough, and if such *imponderabilia* as professional status and public recognition were certain enough, there is a great deal of force in the arguments by which abstention from actual practice could be justified. But in present circumstances it is possible neither to offer sufficient salary nor to fulfil the other conditions named above, as far as London teachers are concerned, and, we should say, as far as the teachers are concerned in any part of England. Unless this state of affairs is fully faced any comprehensive scheme for reforming medical education is academic rather than practical. State aid is necessary; and with this the long-proposed principle of amalgamations among London medical schools can be combined. Sir WILLIAM HALE WHITE's plan would ensure the student receiving his teaching in clinical medicine from at least three teachers instead of from one only: a plan which, he believes, is good not for the student alone but for the teachers also. That must be rather a matter of surmise. The actual contact with the patient in the wards has always been the great point of London medical education, a contact which the inexhaustible clinical material of London has rendered peculiarly easy, and one which all our provincial schools try to provide for their students.

The equipment of the medical student for general medical practice presents at every centre of medical education one great problem—how best to correlate clinical teaching with laboratory work. Mr. CRERAR advocates that the general practitioner should be trained to do bacteriological work for himself; he dislikes the mere laboratory diagnosis of diphtheria. The tendency of the day is rather in the opposite direction of specialisation in clinical pathology, a tendency easily to be explained by the ever-increasing multiplicity and complexity of the work done in the laboratory. But it is absolutely necessary that the clinician should be associated with the pathologist and the bacteriologist in treatment. They study the patient from different angles of vision, and perspective is best attained when they exchange their points of view, while their intercourse should be free and frequent. It is in assessing the value of recent developments of laboratory diagnosis that general practitioners are often at sea; and many of them feel that of late years they have not had altogether the happiest of guidance in such questions from those leading teachers and consultants from whom they have the most right to expect it. Too

often methods of diagnosis and treatment have received the blessing of well-known teachers and clinicians, only to prove, after longer or shorter experience, to be fallacious. Many a practitioner has had to face this experience of feeling himself "let down" by those in authority, whose vigilance has been, to say the least, insufficient. And such failures not merely discourage the practitioner genuinely anxious to keep abreast with modern research; they directly encourage quackery amongst the less scrupulous, and rule-of-thumb methods amongst the lazy. Proper relations at all educational centres between the laboratory and the ward on the one hand, and proper relations between the clinical and the pathological aspect of disease in the practitioner's mind on the other hand, should alter all this, and it should not be impossible to secure these things.

Belgian Doctors' and Pharmacists' Relief Fund.

At the last meeting of the Executive Committee of this Fund a letter, a translation of which is reproduced in full on p. 235, was received by the Committee from Dr. V. PECHÈRE, the President of the Comité National de Secours et d'Alimentation (Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés). The Comité National is the body sitting in Brussels to whom the dispensation of the contributions of the Funds in behalf of the suffering Belgian doctors and pharmacists in Belgium has been entrusted. The Belgian Doctors' and Pharmacists' Relief Fund has raised upwards of £25,000 during its life of a little over four years. The greater part of this money has been received directly from British doctors and pharmacists at home, in the Colonies, and in India, though during the closing stages of the war substantial grants have come from the American Red Cross, to the enormous benefit of the charges of the Fund. After the immediate wants of Belgian doctors and pharmacists and their families, arriving in this country as refugees, had been met by the Fund, the bulk of the money was duly distributed in monthly donations varying from £800 to £400 among Belgian doctors and pharmacists remaining in Belgium, the organisation of which Dr. PECHÈRE is the head undertaking the difficult and delicate task of distribution. Dr. PECHÈRE's committee has wisely husbanded the contributions sent to them, so that a certain amount of money should remain in hand for the succour and rehabilitation of Belgian doctors and pharmacists after the war; and it goes without saying that the extraordinarily generous suggestion of Dr. PECHÈRE, which will be found in his eloquent letter of gratitude—that this money should be returned to the Fund—has been disregarded by the Committee of the Fund. It was definitely stated in the original programme of those who organised the Fund that it would be impossible for British doctors and pharmacists to give too much money, because, when the immediate needs had been met, those of rehabilitation must remain and be very heavy. Many doctors and pharmacists in Belgium were materially ruined and would not be able to return to work without pecuniary grants. All readers of the medical and pharmaceutical journals who have kept the objects of the Fund in recollection will approve of the decision of the Committee of the Fund.

The Belgian Doctors' and Pharmacists' Relief Fund is closed as from Monday next, Feb. 10th, the small sum remaining in the hands of the honorary treasurer being probably sufficient to meet any remaining calls from Belgian refugees in this country. The Fund has disbursed the whole of the sum collected—over £25,000—save £90; and the cost of collection and distribution has been under £200, including the printing and postage of circulars and reports at war rates. The secretarial work and that of the treasurer have been done gratuitously, both by the officers named and by their assistants; a large proportion of the postage has been defrayed by THE LANCET; the auditors made their inspections of and reports on the books of the Fund for a nominal fee; and the Bank treated the Fund with special courtesy. These are the things that account for the economical administration of the Fund's resources.

Annotations.

"Ne quid nimis."

THE CONTROL OF TUBERCULOSIS IN FRANCE.

FRANCE, ahead of this country in so many departments of preventive medicine, has yet been tardy to take any concerted action in controlling the ravages of the tubercle bacillus; and with the history of the opposition to such measures in this country still vividly before the mind our Paris Correspondent's graphic story of the conflicting currents of medical opinion in Paris makes excellent reading. The great majority of doctors in France are, he says, hostile to the compulsory notification of tuberculosis. So they were in this country; but the notification has been confidential, has not broken that deep-seated instinct of professional secrecy which Paris holds as dear as London, the Frenchman as dear as the Briton, and notification has now, in consequence, no considerable body of opponents. Our Correspondent pictures the unhappy position of the notified patient when the agent of the local authority arrives with imposing apparatus to disinfect him and his dwelling, thus spreading terror among the indignant neighbourhood. Doubtless where tenement houses are the rule rather than the exception, the necessary measures of control and hygiene may attract undue attention, but in this country the tact of the tuberculosis nurse and sanitary inspector have already won the day. It is only exaggerated language that has ever described the tuberculous patient as a social pariah in this country or in France, and the tendency is but slightly marked in the stratum of society which provides the largest number as well as the highest percentage of tuberculous patients. The segregation of the advanced case of tuberculosis is of all measures the most practicable and the most urgent, and it should be possible to concentrate upon this without interfering unduly with the legitimate liberty of the subject. The Paris discussion is not without bearing on our own circumstances, where the return of the ex-Service and repatriated man constitutes a problem in tuberculosis control as urgent as any other problem facing us; and, unless properly handled, this problem is likely to cast a shadow on a generation or more.

SUGGESTED LUNACY REFORMS.

THE spirit of reconstruction, so much in the air, has recently been conspicuous in regard to our arrangements for those suffering from mental disorder. The results of the treatment of shell shock and other neuro-psychoses, brought into evidence by war conditions, on lines differing from conventional asylum treatment have of late attracted much public attention, and in January, 1918, the Medico-Psychological Association of Great Britain and Ireland appointed a special committee to consider the amendment of the existing lunacy laws. This committee, after lengthened consideration, reported last November in favour of certain radical changes as regards methods of dealing with cases of unconfirmed mental disease. Its recommendations included the establishment of "clinics" by local authorities for the treatment of nervous and mental diseases in their early stages, quite distinct as regards location and management from recognised institutions for the insane, and, where practicable, in the form of an annexe to a general hospital so as to be available for clinical teaching. The extension of the system of voluntary boarders to all classes of institutions for the insane was also recommended, as were facilities for the reception without certification of patients suffering from mental disease in its early stages into homes approved by the Board of Control, whether private or charitably founded, as well as into asylums, registered hospitals, and licensed houses, the only formality being an intimation to the Board of the fact of the patient's reception or removal. The committee, while not advocating, for the present, any complete revision of the Lunacy Acts, conclude their report by suggesting certain modifications of nomenclature as regards mental patients and the institutions for their treatment which would tend to eliminate the stigma attaching to such terms as "lunatic" and "asylum." It may be well to add that the report purports to deal exclusively with English lunacy legislation. The Board of Control in their fourth annual report, issued in August, 1918, express sympathetic views as regards the recognition and treatment in their earlier stages of indications of mental disorder. They proceed to recommend that the existing law should be amended so as to enable incipient or recent cases "to receive treatment in general or special hospitals, mental institutions, nursing homes, or elsewhere for limited periods, say, six months, without the necessity for certification under the Lunacy Acts, provided it has the supervision of the Board." They also approve of the establishment of "sections" (for both in- and out-patients) at general hospitals for the early diagnosis and treatment of incipient cases, including facilities for organised study and research where the hospital is attached to a medical school.

Having stated these expert professional views, we proceed to consider those forwarded to us of a "Conference of the Visiting Committees of the Asylums of England and Wales," which met at the Guildhall (City of London) on Oct. 29th last, having been convened by Mr. Thomas Field, chairman of the visiting committee of the Bucks County Asylum. This may be taken as mainly representative of the lay element in the administration of public asylums outside the county of London, with the addition of a small medical element, its committee including also five

delegates of the Medico-Psychological Association. The conference is reassembling at the Guildhall this week, and it may therefore suffice to say here that amongst the recommendations are that the words "pauper," "lunatic," "lunacy," and "asylum" should be deleted from the lunacy laws; that special mental hospitals for both in-patients and out-patients suffering from incipient or actual mental disease be established by local authorities, and that in such hospitals (not to be under the supervision of the Board of Control) certification should not be required until it may become necessary, in the opinion of the medical director of such hospital, to transfer the patient to an institution now known as an asylum. "Psychiatric clinics," it is suggested, should be established in connexion with every medical school, and proper facilities be provided therein for research and for teaching and training; and that medical officers appointed to institutions for the mentally afflicted should, within two years of their appointment, be required to hold a recognised diploma in psychiatry.

Reviewing these several sets of opinions, it would seem that there is a general consensus of feeling that the time is ripe for the relaxation of the legal fetters which have impeded the medical treatment of mental illness, especially in its incipient stage. In times past actual, as well as alleged, abuses have given rise to panic-begotten legislation, the restrictions imposed by which have tended to curtail the efforts of the conscientious practitioner for his patient's recovery. The restoration of greater freedom in dealing with those suffering from minor mental ailments is desirable alike in the interests of the patient and his doctor, and a reasonable discretion as to the most suitable surroundings for an incipient or harmless case of mental aberration ought not to be withheld. At the same time due precautions are necessary to guarantee the fitness and integrity of those undertaking the personal charge of mental cases, and some form of official approval—not to say supervision—seems indispensable for this purpose. The determination of the best form may appropriately be delegated to the prospective Ministry of Health. Though psychiatry must necessarily remain a specialty of the profession, its practitioners need to keep closely in touch with the advances of medical science, and it is to be hoped that the establishment of local clinics will tend to bring together in greater degree the family doctor and the specialist, at the same time affording opportunities to the general practitioner for a better insight into expert methods of mental treatment. It has been alleged that some medical officers of asylums, by reason of remoteness of their establishments from centres of ordinary medical activity, tend to comparative isolation from their confrères, and better opportunities of intercourse such as would result from the institution of psychiatric clinics would be beneficial to both classes of practitioners. We are glad to see that one of the proposals before the Guildhall Conference is to relieve medical superintendents of mental hospitals, as much as possible, of their administrative, clerical, and routine duties, so as to leave them more time for medical and scientific work. It must be remembered, however, that in comparison with similar establishments in America and on the continent the medical staff is proportionately low in British asylums, and much remains to be done in the equipment of laboratories for purposes of adequate scientific research.

THE MOBILISATION OF VENEREAL DISEASES.

THE appointment of an Inter-Departmental Committee last week by Dr. Addison to investigate the dangers of communicable diseases incident on demobilisation, and to devise concerted measures to meet these dangers may be taken as a recognition on the part of the Government of the extreme urgency of the situation in regard to venereal diseases. But while the need is so urgent responsible opinions are still sharply divergent in regard to the methods to be employed, and especially whether it is in the best interests of the community at large to popularise precautionary measures to be taken before infection has been incurred. Two important communications which we print this week should be read with close attention. At the Medical Society of London Colonel L. W. Harrison brought forward striking evidence of the value of the abortive treatment of gonorrhœa. We can reckon, he states from his abundant authority, with a fair amount of certainty on all the gonococci within the urethra being accessible to antiseptics on the first day of the developed disease. Promptitude of action is here of the first importance, and diligent propaganda are necessary to promote it. Sir Archdall Reid and Surgeon Commander P. H. Boyden, R.N., take the disinfection back to the very earliest post-contact stage. A swab of cotton-wool, a small quantity of a 1 per mille solution of potassium permanganate, used with sober care, have been effective in protecting 20,000 men—and an untold number of innocent women and children—against infection with the gonococcus. These are results which must be carefully weighed by any committee appointed to consider prevention of venereal diseases.

THE AMERICAN PUBLIC HEALTH ASSOCIATION AND INFLUENZA.

THE annual meeting of the American Public Health Association was held in Chicago under the presidency of Dr. Charles Hastings, medical officer of health for Toronto, from Dec. 9th to 12th, 1918, after having been postponed from October on account of the severity of the influenza epidemic. Many of the papers contributed dealt, as was to be expected, with influenza in its various phases, and an editorial committee was appointed to prepare and publish a bulletin formulating the facts and opinions brought out at the meeting. The main points in this influenza bulletin may be briefly stated thus. Influenza is believed to be caused by an organism of an infective nature, not yet exactly determined, which lowers the resistance of the body as a whole and of the respiratory organs in particular. This diminution of vital force leaves the system open to the invasion of other pathogenic organisms, of which the most important are the Pfeiffer bacillus and various strains of pneumococcus and streptococcus. Certain of these organisms are regarded by careful observers as the primary cause of the disease; but while one or more of them may be isolated from a particular case, the dominant variety of organism has been found to vary in different parts of the American Continent. As regards the use of prophylactic vaccine, if it is assumed that the cause of the epidemic is an unknown virus it seems impracticable to prevent the primary disease by vaccination with known organisms, whatever theoretical basis there may be for the use of vaccines directed against secondary infections, especially if the vaccine used includes

the organisms responsible for the particular complications ruling in the locality. Vaccines adjusted to meet local conditions have been used, but any evaluation of the reports is premature. Stock vaccines have appeared to mitigate some of the outbreaks and the severity of the complicating infections, but in cases where control observations have been made no appreciable effect has been noted. The fact that the vaccine is usually employed after the epidemic has broken out and is perhaps declining, and that an unknown number of people have been exposed, make it difficult to draw conclusions as to its efficacy. The committee recommends that until such time as the efficacy or otherwise of prophylactic vaccination against influenza has been established vaccines, if used at all, should be employed with control observations, permitting a fair comparison to be made of the number of deaths among the vaccinated and unvaccinated groups. Particular attention should be directed to securing data as to the period in the epidemic at which vaccinated and unvaccinated persons developed the disease. The committee are of the opinion that the indiscriminate use of stock vaccines against influenza alone, or against influenza plus pneumonia, is not to be recommended. On the basis of the most trustworthy data then available a sub-committee of the association appointed to consider the history and statistics of the epidemic estimated that there were not less than 400,000 deaths from the disease in the United States during the months of September, October, and November last, the greater number occurring in the age-group 20-40. An unusually high pneumonia rate for several years to come was held to be a probable after-effect of the epidemic. The report emphasises the comparative uselessness of terminal disinfection, the fact that the taking of alcohol serves no preventive purpose, and the futility of sprays and gargles. Instead of protecting the nose and throat from infection their employment is held to tend to remove the protective mucus, to spread infection, and to increase the chance of infecting organisms gaining an entrance. Assuming that influenza is spread solely by means of discharges from the nose and throat of infected persons, the most effective method of prevention lies in sputum control and in the supervision of food and drink. Isolation of infected persons will achieve this end and should be enforced as far as possible. The desirability of wearing masks during an epidemic was discussed at considerable length, and it was pointed out in an editorial in the *Journal of the American Medical Association* for Dec. 21st, 1918, that "evidence leads to the opinion that, properly used, the face-mask has value in the prophylaxis of influenza." Whether it is practicable on a wide scale the editorial committee holds to be quite a different matter.

RUPTURE OF THE CARDIAC VALVES DUE TO AN EXPLOSION.

Traumatic rupture of the cardiac valves is a rare accident; only about 80 cases have been recorded. In the war French writers have reported cases of lesions produced by explosions, often at some distance, due to the concussion of the aerial waves (the "wind" of the explosion). Rupture of both lungs and lesions of the nervous system have been described. But not till 1918, after three years of war, was a cardiac lesion recorded. Cramer then described a case of aortic insufficiency due to

an explosion, and later Brossard and Heitz two cases. The question has been raised whether such lesions may not have been due to the projection of the patient against the ground. In the *Paris Médical* MM. M. Perrin and G. Richard have recently reported two cases which are important, because the only explanation of the lesion appears to be the force of the explosion.

In one the patient was a strong but obese soldier, aged 36 years, who had been carefully examined on several occasions, and special attention paid to his heart, because of slight dyspnoea on exertion. In the battle of Cappy on Sept. 26th, 1914, he received a bullet wound in the thigh. While being removed with other wounded in a cart a shell burst near it, smashing one of the wheels. The wounded were much shaken, and the patient was rendered unconscious for a few seconds. On recovery he complained of oppression and pain in the chest. He was evacuated to a town in the interior, and suffered from attacks of suffocation ever since the explosion. When he came under observation again in 1917 he had resumed his occupation of commercial traveller. He had regained his weight, but was shallow, and suffered from dyspnoea and palpitation on going upstairs. The heart was hypertrophied, the apex beat being in the sixth interspace two fingerbreadths outside the nipple line, and there was aortic regurgitation.

In the second case a woman, aged 46 years, was in good health until a bomb dropped within 3 metres of her during an air raid on Nancy on Oct. 6th, 1917. The violence of the explosion was such that she felt lifted from the ground and would have fallen if she had not taken hold of railings. She felt an acute retrosternal pain, but was able to get home, a distance of 400 metres. On the way she bled severely from the nose. During the following days the pain disappeared, but there was dyspnoea on the slightest effort. When examined a fortnight after the accident the pulse was 88, small and irregular, and there was an apical systolic murmur which was propagated in all directions, but principally towards the axilla. In January, 1918, these conditions persisted. Probably the chordæ tendineæ of the mitral valve were ruptured.

In none of the necropsies in cases of traumatic rupture of the mitral valve was the valve itself found torn; the lesion involved the chordæ tendineæ and the muscoli papillares, and the former twice as often as the latter. Numerous cases have been published of rupture of cardiac valves due to violent effort. Rupture of the aortic valve is more frequent than rupture of the mitral, and this than rupture of the tricuspid. Only a single case of rupture of the pulmonary valves appears to have been recorded.

SAFE ANÆSTHESIA.

A YEAR ago, in discussing the use of gas and oxygen as an anæsthetic mixture, we suggested that anæsthetists might congratulate themselves on being able to bring the comforts of a non-toxic anæsthesia within the reach of a large proportion of patients undergoing operation. Since then the method has had a further extended trial with the armies in France, and it can hardly be doubted that many lives have been saved thereby. It has been observed at more than one casualty clearing station that multiple amputations carried out under gas and oxygen anæsthesia recovered, while men who submitted to similar operation under other anæsthetics died. Gas and oxygen has been found to be the only anæsthetic tolerated in the case of wounded men suffering from serious collapse. At home, in the wards of the 1st London General Hospital and of Queen Alexandra's Hospital for Officers at Highgate, many profoundly septic cases have taken this anæsthetic with happy results; five cases of amputation at the hip-joint in men who were already profoundly toxæmic all recovered. We therefore call attention with pleasure to the outfit described by Mr. H. E. G. Boyle, Captain, R.A.M.C. (T.), on p. 226 of our present issue. Mr. Boyle there records 3600 administrations by himself and others without

fatality. In a number of abdominal operations a little ether or chloroform-ether mixture was used to supplement the nitrous oxide and oxygen. This addition is stated not to prejudice the well-known condition of well-being that follows the administration of this anæsthetic. Patients regain consciousness almost at once when the administration stops; little, if any, taste of ether or chloroform remains and vomiting is exceptional. Certain objections there are to this method of anæsthesia, and for the most part of an obvious nature. Steel cylinders to contain compressed gases are at present heavy and expensive, and gas is liable to be wasted by accidental escape at high pressure with damage to tubes and alarm to the patient. The expense, while inevitable, is one which the private patient is likely to face gladly enough. The substitution of air for oxygen suggested, on the basis of his own experience, by Dr. J. H. Fryer, Captain, R.A.M.C. (T.), on p. 216, would tend towards economy. Mr. Boyle states that with his apparatus the cost of materials works out at about 10s. an hour. The difficulty in regard to weight has been to some extent surmounted, as Type (c), for private practice, weighs only some 60 lb., allowing for 2½ hours' administration. Waste of gas has been practically abolished by the use of reducing valves on the cylinders. Other more elaborate safeguards have been tried. At one casualty clearing station in France an ingenious arrangement for equalising pressure has been worked out by the Rev. J. A. Gray, M.C., who has administered several hundred anæsthetics with it for Dr. J. Basil Cook and Dr. A. W. H. Donaldson, Majors, R.A.M.C. (T.). Oil drums, adapted to rise and fall on the principle of the large gasometer, were inserted between the cylinders and the inhalation-bag. The two medical officers substantiate Father Gray's claims for his appliance, which are as follow:—

1. The drums automatically stop the flow of gases from the cylinders when the containers rise to a certain height, thus avoiding any danger of wasting gas, straining, or bursting the bag or rubber tubes. The breathing bag can never be more than nicely full, as the pressure in the gasometers is only sufficient for this.
2. They ensure a reserve of gas sufficient for the requirements of the patient, when a cylinder runs empty, and afford the anæsthetist convenient time to replace the empty with a full cylinder.
3. The gases enter the mixing chamber at an unvarying pressure throughout the time that the patient is under. Once complete anæsthesia is reached the patient continues to breathe steadily for a long time, almost without attention from the anæsthetist, whose only duty usually is slightly to increase the flow of oxygen from time to time if the operation is a long one, and to note the gauges on the cylinders to see that they do not run empty.

The mechanical difficulties of this safe and comfortable form of anæsthesia are thus being surmounted, and we doubt not that administrators will readily acquire skill in the new technique.

FAMILIARITY WITH THE OPHTHALMOSCOPE.

In a symposium on the teaching of eye diseases in the medical curriculum, published in a recent issue of the *Edinburgh Medical Journal*, Dr. W. G. Sym, recognising the fact that the average practitioner almost never uses an ophthalmoscope, deems it hopeless to expect to alter this state of things, whereas Dr. Freeland Fergus would not let a man enter the medical profession unless he can use an ophthalmoscope almost with the same facility with which he uses a clinical thermometer. In view of its importance in the diagnosis of syphilis, diabetes, arterio-sclerosis, nephritis, pernicious anæmia, tabes, and especially in cerebral tumour, it would

seem that Dr. Fergus is right. At the same time, if the student is only taught its use in connexion with a special course on eye diseases we believe in the majority of cases the ultimate effect will be but slight. The remedy is for the student, having early in his course got over the technical difficulties of mastering the instrument, to be required to employ it during his medical training on every case when it might throw light on diagnosis. In this way the student would realise its importance in connexion with general disease and come to look upon it as a necessary part of his equipment.

THE LANCET, AUGUST 24TH, 1918.

THE Manager of THE LANCET would like to re-purchase or to receive copies of the issue of August 24th for which readers may have no further use, to enable him to replace copies for libraries and institutions in India and the East which were lost at sea owing to enemy action. Such copies should please be addressed to him at 423, Strand, London, W.C. 2.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Lepers in Canada.

WHILE leprosy is still endemic in Louisiana, and 400 or more cases have been recorded this century in this and other North American States, Canada is fortunate in having at present a total of only 13 lepers in the lazaretto at Tracadie, N.B., and 5 in the Darcy Island lazaretto, British Columbia. These are the only cases in the Dominion of Canada so far as is known.

Pensions to Canadian Soldiers.

The Board of Pension Commissioners in Canada has authorised the following information with regard to the granting of pensions to the Canadian soldiery:—

1. Soldiers are not pensionable for service only.
2. Pensions are awarded only to cases of disablement due to a wound or disease occurring on, resulting from, or aggravated on service.
3. Disablement is estimated only by the effect it may have upon the soldier's capacity for ordinary work. That he cannot return to his former occupation does not entitle him to a higher pension than the extent of his disability warrants.
4. If a soldier is so disabled that he is completely incapacitated for ordinary work he receives a "total disability" pension, which has been fixed at \$50.00 a month.
5. If by his disablement a soldier's capacity for ordinary work is lessened he receives a percentage of the "total disability" pension equal to his handicap.
6. This percentage has been most carefully and thoroughly worked out for every disability, and it is as accurate and fair as it is possible to make it.
7. The earnings a man may be capable of making or the amount of his pre-war earnings will not in any way affect the amount of pension awarded. The extent of his disability is alone considered.
8. Widows of soldiers or sailors who have died are entitled to pensions for so long as they do not marry.
9. Children of sailors or soldiers are entitled to pension up to the age of 16 if boys, or 17 if girls.
10. Pension is only granted to the parents of a sailor or soldier when he was their main support previous to death.

Health Department: Province of Alberta.

A recent Order in Council of the Government of the Province of Alberta has transferred the whole health work of that province to the Department of the new Minister of Municipalities, the Hon. A. G. Mackay, who sounds a note of warning with regard to the proposed municipal hospitals in that province. He thinks that the hospital areas may be too small for safe financing. It would be unfortunate if small districts were saddled with heavy assessments and not have sufficient funds to carry on hospital work successfully; and the Minister states he will not establish a district unless he is absolutely satisfied that the financial position is sufficiently strong. The matter of boundaries must receive careful consideration, as small territories might be left stranded between districts.

Improving the Health of Canada.

Revelations as to the average standard of physical fitness of single men, as shown by the military records in Western Canada, have resulted in the inauguration of a movement

led by the city councils of certain cities in Western Canada, particularly Saskatoon, Sask., to improve the health of Canada as a whole. Representations are to be made to all Provincial Governments and to the Federal Government as well, advising them to take advantage of the records so compiled by the military authorities. The matter has been considered in Council by the Dominion Government, and the Minister of Militia has been authorised to prepare a report on the subject and submit it to Council.

The Case of Military Medical Officers and Civilian Practitioners.

An order has recently been issued: "No medical officer who is engaged in civil practice will be permitted to draw full-time pay and allowances except when sent for temporary duty away from his home station."

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Bill to Provide Treatment for Tuberculous Patients.

M. Louis Mourier, Under Secretary of State for the Service de Santé at the Ministry of War, has laid upon the table of the Chamber of Deputies a Bill, supported by the Government, the objects of which include the compulsory notification of tuberculosis, the gratuitous treatment in hospital of necessitous consumptives, and the allocation of grants to their families. According to the draft of the Bill every case of pulmonary tuberculosis must be notified within eight days following the establishment of the diagnosis, the notification to be made by the medical man treating the case to a specially instituted sanitary service. The doctor will be required to state in his certificate whether medical care and preventive measures are assured. Should this guarantee, which the sanitary service will have the right of checking, not be produced, the service will invite the patient to attend at a dispensary, where hospital treatment will be prescribed if his physical condition and the absence of available care render it indispensable. When desirable resort will be had to disinfection. Communes, Departments, and the State itself are called upon to provide for the treatment, in or out of hospital, of necessitous persons attacked by tuberculosis, and to give grants to the families in which the supporting member has been sent away to hospital. Penalties are provided for lack of observance of these instructions.

In the preamble to the Bill M. Mourier explains his intention to extend to the whole of the population the benefits of the organisation which has been set up during the war for tuberculous soldiers. He indicates that 55,000 soldiers attacked by tuberculosis have been treated in hospitals and sanitary stations, and that France at the moment has to deal with something like half a million cases of tuberculosis. The amount budgeted for is 84 million francs for setting up the service and 100 million francs for annual expenses.

The Compulsory Notification of Tuberculosis.

The announcement that this Bill has been laid upon the table of the House has provoked lively interest in medical circles. It is not the first time that this question has been raised by the Government of the day. Since the year 1890 the Academy of Medicine has five times been asked to give favourable consideration to the placing of tuberculosis on the list of diseases to be compulsorily notified. Four times the Academy refused; the fifth time 46 voted for notification, 45 against, and 1 abstained. It appears that the great majority of doctors is, in fact, hostile to the measure. All the professional corporations have pronounced themselves unanimously against it. The Medical Association of the Seine at its meeting on Oct. 8th last passed a vote in anticipation that it would not submit to the new Bill if it became law.

Medical men see in it a gross attack on professional secrecy, which must expose the practitioner who violates this secrecy to the mistrust and loss of his clientèle. In cases where the doctor has thought it his duty to notify to the authority the existence of tuberculosis the next item on the programme has been the arrival of a disinfecting engine, which has spread terror among the neighbours, after which the unfortunate tenant has been expelled from the house by the landlord, with no chance of finding other lodging. Notification is received well enough by the public in the case of acute infectious

disorders of rapid progress, such as oblige the sick man to keep his bed, when humane feeling forbids the overbearing neighbour to demand his expulsion. It is not the same with the apparently lusty patient who goes about and whom his neighbour desires to see living elsewhere. After a prolonged period of complete indifference to the danger of contagion in tuberculosis the public, under the spell of the vigorous campaign undertaken to spread the fear of contagion and the necessity of serious prophylaxis, is now the prey of a veritable tuberculophobia. The working man recognised as tuberculous is dismissed from his factory; the clerk from his office; the domestic from the house where she serves. All are thus deprived of their means of livelihood and the family which they support is plunged into misery.

Other Arguments against the Bill.

Such are the arguments used by the opponents of the Bill. Professor Albert Robin, who may be regarded as their ring-leader, adds several other interesting points. He regards disinfection as an illusory measure if not carried out in all the places traversed by the consumptive, or unless he is interned like a plague-stricken subject. Systematic measures of internment or of in-patient treatment would, however, entail, including grants to families deprived of support, an initial expense of 250 million francs and an annual administration cost of 210 million francs. Society, M. Robin thinks, can protect itself at less cost and with weapons of greater efficiency by combating alcoholism, unhealthy housing conditions, and by observance of greater public and private hygiene, and all this can be done without any vexation or economic damage to patients and their families. Efforts already made in this sense have not been in vain, since during the last 20 years tuberculosis has diminished in Paris by one-quarter. And since in practice the State cannot succeed in caring for all the known consumptives, when compulsory notification has made known their exact total, the law will remain a dead letter.

M. Robin proposes, in agreement with the medical corporations, to ask the doctor to notify tuberculosis to the head of the family, who shall turn to the State if he does not possess the power to observe the necessary care and preventive measures. In any case the doctor must not be made the denunciator. For the rest, disinfection of lodgings should be made compulsory after each change of occupant in the absence of a medical certificate to affirm the non-necessity.

Advocacy of the Compulsory Notification.

These are the views of the opponents. Compulsory notification, however, has its advocates in the medical faculty. Professor Letulle and Professor Bezançon argue that the war has produced a new situation by spreading over the country thousands of consumptives, some of them ex-service men with disease aggravated by the war, others repatriated from Germany where insufficient food and bad treatment had resulted in the development of the disease. The question is not merely one of caring for the men themselves, but of preventing the infection of the civil population in which they move. They would like to see a number of special sanitary centres set up, directed by competent and well-paid specialists, occupied with this service alone, to whom notifications should be sent by the family doctor, who would continue to safeguard his professional secrecy. These officers would decide if it was desirable for the State to intervene with the measures already enumerated. All agree that the country must be prepared to make every sacrifice to protect itself from a disease which has made great strides during the war and which, at the present rate of progress, threatens in several years to annihilate the greater part of the population, already none too numerous.

The Academy of Medicine has decided, on the proposition of Professor Hayem, in the presence of this new situation, to reconsider the question of notification and has charged a special commission to present a careful report.

VITAL STATISTICS OF CALCUTTA.—In the third December week, the last for which the statistics are available, the total number of deaths registered was 976. Of these 44 deaths were due to cholera (against 41 and 56 in the two preceding weeks), the number being higher than the average of the past quinquennium by 20. There was no death from plague; 3 deaths from small-pox. Deaths from influenza were returned as 277, against 332 in the previous week. Excluding imported cases the death-rate of the week was 52.5.

THE WORD-ASSOCIATION TEST IN PSYCHIATRY.

- Studies in Word-Association.* By C. G. JUNG, M.D., LL.D. Authorised translation by Dr. M. D. EDER. London: William Heinemann. 1918. Pp. 375. 25s.
- Papers on Psycho-analysis.* By ERNEST JONES, M.D., M.R.C.P. Second edition. London: Baillière, Tindall, and Cox. 1918. 25s. (See Chap. XXII.)
- The Theory of Psycho-analysis.* By C. G. JUNG, M.D., LL.D. New York: Nervous and Mental Disease Publishing Company. 1915.
- The Psychopathology of Everyday Life.* By Professor Dr. SIGMUND FREUD, LL.D. Authorised English edition by Dr. A. A. BRILL. London: T. Fisher Unwin. 1914.

It was in 1904 that Dr. C. G. Jung and his colleagues began their researches on word-association, and in a series of some 13 papers they have so elaborated and elucidated the method as definitely to establish its trustworthiness for the investigation of the conscious and the unconscious mind. Yet it has been productive of surprisingly little original study in this country, has aroused comparatively little attention, and has not, apparently, taken any regular place in the routine examination of nervous and mental cases, whereas in America word-association tests have been freely used both in experimental psychology and in practical psychiatry. We may hope for augmentation of interest in the subject in England now that the sources of information are accessible to the English student in Dr. Eder's excellent translation and edition of the original papers of Jung, Riklin, Binswanger, Bleuler, and the others, some of which work, it is curious to remember, was first published in the pages of *Brain* (1907), though at the time little seems to have been made of it.

For a generation writers of psychological text-books have embodied chapters or sections on "association of ideas," and have formulated "laws" and devised experimental illustrations of its action, but they have been singularly lacking in any fertility of application to clinical problems of these psychological laws—an instance of the remoteness of scholastic psychology from the actualities of psychiatry. Word-association as a part of association of ideas is not a novelty; it was alluded to by Galton in his "Inquiries into Human Faculty" as long ago as 1883. To Jung, however, must be assigned the credit of developing word-association into an art, and of raising it to a science. And let it not be supposed that the process is of mere theoretic interest as furnishing suitable exercise for the budding psychologist; apart from its use in the investigation of the normal mind, it constitutes in conjunction with the method of psycho-analysis a diagnostic instrument of the greatest utility, and without its aid psycho-pathology would not have made so many strides in recent years. As Dr. Eder remarks, every serious student of psychology, every educationist, everyone who wishes to engage in the study or treatment of morbid mental processes, will find in Jung's "Studies" a storehouse of facts which will serve not only as a solid basis for his own studies but also as a starting-point for further research.

Obviously the first step was to determine the nature of association-reactions in normal individuals, and to be satisfied of their value as an index to the working of the mind, before proceeding to deal with the abnormal. It is a truism that association is a fundamental phenomenon in psychical activity, precisely as is linked neuronie functioning for the physiological activity of reflex arcs; and as differing sensory stimuli may simultaneously compete for and one gain possession of the final common path to motor action, so may psychical associations, concurrently aroused by some stimulus, undergo modification by inhibition, distraction of attention, variability of mood, interest, fatigue, and other psychical factors, whereby development follows, if at all, in one direction only. To simplify the pleomorphic complexity of reaction to a stimulus, to facilitate investigation and to prevent loss of precision owing to the awakening of numbers of more or less distinct presentations in succession, the word-association method requires one response only to the stimulus-word, to be given as quickly as possible, "without thinking" so to say—i.e., without allowing the action of directed or conscious thought to begin at once to modify the

train of association aroused. Only thus can any real insight be gained into the processes not merely of the conscious but especially of the unconscious mind. We wish the response to the stimulus to be as inevitable, as immediate, as uncontrolled by higher psychical considerations, as is the orbicularis response to the particle irritating the cornea uncontrolled by conscious interference. Difficult as this may be of realisation in all cases, the fact remains that the method of immediate reaction to a stimulus-word by the utterance of the first word, and no other, thereby presented to the subject's mind has proved of extreme practical value in tracing unconscious mechanisms, not seldom to the surprise of the subject of the experiment.

For ordinary purposes a list of some 100 words is taken (various lists are given in various books; any worker may evolve a separate set for himself) and the subject is directed to give, in answer to each of them in succession, the first word that comes into his mind, while the reaction-time is noted by the observer in fifths of a second. Jung and Riklin worked out no less than 12,400 associations in normal subjects in order to determine "types" of reaction and to ascertain the effects of attention on the association process. Their classification is based on the examination of educated and less educated individuals of both sexes, and may be (incompletely) summarised as follows:—

- I. Inner association (associations of affinity or similarity).
 1. Coördination: e.g., cherry—apple; pain—pleasure.
 2. Predicate relationship (the response refers to the stimulus-word as subject or object, noun-adjective responses, &c.): e.g., glass—brittle; brave—soldier; to polish—brass.
 3. Causal dependence: e.g., pain—tears.
- II. Outer association (associations of practice or contiguity).
 1. Coexistence: e.g., Sunday—church; pipe—tobacco.
 2. Identity: e.g., quarrel—dispute; take care—look out.
 3. Verbal-motor forms ("mechanical" responses through constant association in speech): e.g., bitter—sweet; white—black; hammer—tongs. Also word-complements: e.g., tooth—ache; fish—monger.
- III. Clang-reactions (depending on sound).
 1. Word-completions: e.g., wonder—ful; modest—y.
 2. Clang: e.g., green—green; wind—w—winter.
 3. Rhyme: e.g., make—shake; Moses—noes.

IV. Residual group, including indirect and meaningless reactions, faults, perseveration, repetition, verbal linking, and egocentric reactions.

Perseveration¹ is of much significance. It consists in an association conditioning or influencing one or more of the following reactions. A fault is the omission of a reaction, usually under the influence of emotion, while the repetition of the stimulus-word is also an emotional phenomenon.

Passing now to some of Jung and Riklin's generalisations, we may cite them without any critical digressions. Where clang-reactions occur they are indicative of disturbance of attention, a fact of much diagnostic value. The educated show a distinctly shallower or more superficial type of reaction than the less well educated, a phenomenon mainly of attention. The chief reasons for this somewhat unexpected result seem to be that for the uneducated subject the experiment is taken more seriously; he is less at ease; influenced by habit, he instinctively apprehends the single stimulus-word as a question or a command, with the intensity of attention necessary for a proper answer. In men indirect associations [e.g., remorse—(mourning)—black; ear—(sound)—ground; mast—(master)—servant; milk—(maid)—rosy; severe—(father—mother)—dead; &c.] are distinctly more frequent than in women. Indirect reactions may also be taken to indicate distraction of attention.

More important, perhaps, is the differentiation of two general types of response: (1) that of the individual who shows an objective, impersonal habit of mind; (2) that where subjective experiences are made use of, often emotionally charged. In the former the reaction is usually connected by objective meaning with the stimulus-word; in the latter "constellations" occur. Associations which are only explicable by personal events of recent date or of the present moment usually charged with an affective tone, are known as constellations. Further, a complex—i.e., a system of ideas revolving round some central focus constituted by some particular previous experience commonly associated with emotional disturbance, often stands out so prominently and acts so intensively, as Jung

¹ Persistence is a better expression than perseveration, which has quite other significance in connexion with certain organic cerebral symptoms.

says, as to form a whole number of constellations, faults, and reactions with long reaction-time. Such complex constellations, in the second type, may be expressed undisguisedly, or, and here at length we reach the essence of the method as applied to the neuroses and psychoses, may occur in a disguised form in consequence of a repression which is not always conscious. One of the conspicuous services rendered to psychopathology by Jung and Riklin has been their detection of the effects of unconscious constellation and unconscious repression as revealed in responses to association tests. The departures in such cases from the normal and usual types of reaction are called by them "complex-indicators," and may be enumerated as follows:—

1. Prolongation of the reaction-time.
2. An unusual and auspicious setting of the reaction, frequently in sentence form, not explained by the reaction-word itself.
3. Intrusion of the phenomena of attention. When a complex emerges it draws a certain amount of attention to itself, hence the reaction to a given word becomes unexpectedly superficial, and if the same phenomenon is repeated at a similar stimulus-word the occurrence of some inward distraction is confirmed.
4. Faults. The emerging complex absorbs all the attention.
5. Perseveration. The critical reaction may not have been noticed, but the succeeding reaction is under the influence of the persisting emotional element and is seen to be abnormal.
6. Assimilation of the stimulus-word, which is taken in a peculiar sense or misunderstood in a peculiar way, in accordance with the affective ideas filling up consciousness.
7. Finally, in some subjects repetitions of certain words in their answers are often found to be more or less closely associated with the complex, or to represent it indirectly.

It would be easy to give from experience concrete illustrations of the actual occurrence of these complex-indicators; suffice it to say that Jung's contention that minute observation of the subject and his responses enables the worker to detect traces of affective processes linked with concealed or half-concealed complexes is absolutely borne out by experience of the association test. In his own words, "the reactions are an extremely refined reagent for affective processes in particular," which, as we know, play a prominent part in the evolution of the psychoneuroses. No one ignorant of the method can form any true idea of its extraordinary delicacy, and may well be inclined to disbelieve that in such simple means a key to unlock the unconscious mind lies at hand. But that this is so needs no further proof than the experiences of those who use the method. Its relation to psycho-analysis is that of an adjunct; both are technical methods for the exploration of unconscious mental processes. By means of the association test a number of defective reactions—complex-indicators—are obtained, and for their amplification and interpretation psycho-analysis can be used. Freud says that "the dream is the *via regia* to the unconscious," but in word-association tests we have an easy and simple method of reaching unconscious or partly conscious constellations, and not infrequently, in actual practice, one clue thus obtained has sufficed to render possible the unravelling of the whole pathogenic complex. Clinically, it is often enough ascertained that repression is not so complete as is supposed, and, therapeutically, good results often succeed the following up of association clues without resort to intricate and long-continued psycho-analysis.

There is no inherent difference between the word-reactions, as such, of the normal and of the pathological individual. All of us have our complexes and our constellations, and our affective trends too. In the case of the neuroses, however, affective processes play a prominent rôle; in certain conditions, notably hysteria, they are perhaps all-important. Hence studies in word-association in the various neuroses and psychoneuroses may serve to show predominance of certain types of reaction over others, and this is precisely what has been demonstrated by Jung's colleagues. The associations of imbeciles and idiots, of epileptics and hysterics, of sufferers from dementia præcox, have all been patiently worked at, and are particularly instructive from the viewpoint of diagnosis. There is, however, still a vast amount of ground to be covered. Dr. C. S. Myers, in his latest contribution to the study of shell shock and allied conditions, begs for investigation of association tests in such patients and of the possible effects of glandular extracts on their reaction-times. Dr. Eder hopes that the application of the method to education will result in the establishment of standard tests for normal and abnormal children, complementary to the intellectual tests standardised by Binet. The method is obviously capable of the widest application.

S. A. K. W.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

MEETING OF EXECUTIVE COMMITTEE: CLOSING OF THE FUND.

A MEETING of the Executive Committee of this Fund was held on Jan. 30th at the offices of THE LANCET, Sir RICKMAN GODLEE being in the chair.

A letter was read from Dr. V. Pechère, the President of the Comité National de Secours et d'Alimentation (Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés). Having been warned by the Chairman of the Belgian Doctors' and Pharmacists' Relief Fund that the reserves of the Fund, which had been able to continue its work steadily until the end of 1918, were now coming to a close, the following reply, brought by hand by Madame Pechère, was received:—

Bruxelles, Dec. 15th, 1918.

DEAR SIR RICKMAN GODLEE,—I have received your kind letter of Nov. 24th and sincerely thank you for it. In writing to you as President of the "Belgian Doctors' and Pharmacists' Relief Fund," I wish to let you know as soon as possible our infinite gratitude for the inestimable kindness that my foreign colleagues, and particularly my English ones, have rendered to the members of the Medical and Pharmaceutical Professions during the war. It goes without saying that our Committee wishes to include all, whoever they may be, in their expression of gratitude, who, either from far or near, have helped to succour their suffering Belgian colleagues.

The praise that you express of all your helpers, especially Dr. Des Vœux, Madame Des Vœux, and their admirable secretary in their generous efforts in favour of the doctors and chemists who took refuge in England, and in the special assistance of Dr. Sprigge (of THE LANCET), so highly appreciated, also of certain ladies attached to your committee; all this is very pleasant to hear.

We wish particularly to thank those who have taken a preponderant part in the joint professional responsibility until we can do so personally, of which I do not despair in the near future. While awaiting the moment we feel our words are insufficient to express our feelings, but, believe me, they are profoundly sincere and addressed to each and all. As to the American contribution sent by the Red Cross, and by the doctors and chemists of the United States, we know they showed great generosity on our behalf. We wrote to Mr. Poland when he was staying in Brussels to express our gratitude. I personally saw Mr. H over as he passed through Belgium two years ago, and asked him to express our thanks to those to whom they were due. I am writing to the representative of the American Red Cross in the same terms of gratitude as those expressed in this letter.

We have often written letters to you and to our benefactors, but we are convinced they never reached you. Now that communication is possible, we wish everyone to know that the gifts we have received have helped to better the sad lot of our poor charges (*protégés*), which was deplorable. Your help will never be forgotten, but the brotherly enthusiasm which stirred up and kept going your inestimable contributions has touched us more than the material help represented.

You tell me in your letter, in reference to a cheque for £400 and another for £800, that our English colleagues have themselves felt the effect of the war and that their generosity has probably reached its limit. That is a thing we can well understand; there comes a time always in giving when, with the best intention in the world, one is obliged to come to a full stop.

We are now feeling scruples, as we have in our possession funds which might be useful to our poorer English colleagues. My Committee unanimously agree that we should return part of the funds. The existence of a considerable sum perhaps needs some explanation. Our grants at the beginning of the war were from 300 fr. to 600 fr. a quarter to each necessitous person. These allocations were raised later to 700 fr. and sometimes 800 fr. in particular cases of an urgent sort. These grants were only given after repeated inquiries, carried out with the closest attention to the financial state of the receivers, as we were most anxious to discharge your instructions "only to give to the most needy cases." These funds often had to feed, clothe, and warm families consisting of numerous persons whose source of living no longer existed. If you realise the price of food in Belgium during the war—1 kilo of meat cost 30 fr., 1 lb. of butter 20 fr., one ordinary suit of clothes 350 fr., a pair of shoes 200 fr., I think you will consider we acted with parsimony. Nevertheless, those we helped were contented never complained, showed great courage and endurance. Many gave up the subsidies we allowed them and following the suggestions of the English committee we have often reduced the amount given, allowing only for their necessary wants. (Aux plus basses limites compatibles avec les légitimes besoins de nos protégés.) Moreover we had to look to the future, presuming that in the rationed and fighting areas, with which the Germans would not allow us to correspond, there were confères who might suffer the greatest misery on the retreat of the enemy, and would be obliged to have recourse to us for help, therefore we thought it wise to keep funds in reserve, especially as this applied to all Flanders and part of Hainaut (nearly the third of our country). We had also to foresee that we not only had to feed and clothe our friends but might have to provide them with domiciles. Lastly, we thought our help could not end with the cessation of hostilities and must continue for some time, and this did really happen. Notwithstanding the armistice, the price of food is still as high as during the war.

We hear by inquiries and the justifiable demands which are sent by most of our protégés, and by some new ones that help is badly needed. Thus the sums which we have received have not been fully spent, but we shall find the proper employment for them. The resources of our professional societies are very much reduced, the funds from abroad must diminish, or cease. Frankly, our committee, faced by new demands, are glad they have taken such precautions and hope to meet with the approval of your committee. We shall be glad

to hear your views on this matter. In the future, as in the past, we wish to proceed entirely in agreement with you, as the best way in which to prove our gratitude is to act in perfect accord with your intentions.

I shall send very shortly the *procès-verbaux* of our meetings and a résumé of our work and you can judge therefrom of our position.

Veillez agréer, cher Sir Rickman Godlee, pour vous et vos collègues l'assurance de mes sentiments très dévoués.

Bien à vous,

Dr. V. PECHÈRE.

It was decided immediately to hand to Mme. Pechère the reply of the Executive Committee that there could be no question whatever of the return to the Fund of any donations. It was decided to point out that the Comité National de Secours et d'Alimentation had acted not only with care and foresight but actually in accord with the declared intentions of the originators of the Fund—viz., to reserve as much money as possible to meet the position of "médecins et pharmaciens sinistrés" after the war.

Sir RICKMAN GODLEE called attention to the fact that there remained still at the Hall of the Society of Apothecaries a large assortment of instruments presented by British practitioners. He mentioned that he had received a communication from Mr. Samuel Osborn enclosing letters of thanks for certain instruments already distributed in Belgium. It was decided to send immediately to Brussels those instruments which had already been set in order by an instrument-maker and to remove the rest to the offices of THE LANCET, whence they could be distributed as occasion arose.

Dr. DES VŒUX informed the Committee that early in January Mr. David Wallace wrote from Edinburgh offering a complete hospital equipment to go to Belgium. The Comité National in Brussels were informed immediately, but, no answer having been received from Belgium, Dr. Des Vœux wrote accepting Mr. Wallace's offer, which will be brought to the notice of the Comité through Mme. Pechère.

The treasurer's statement showed that a balance remains in hand of £91 16s. 6d. after the January mensuality of £800 had been despatched. The Fund continues to relieve now and again by small grants certain Belgian doctors and pharmacists or their wives remaining in England, but it was felt that the existing balance at the disposal of the Fund should now meet all such calls in the future. It was consequently decided definitely to close the Fund on Feb. 10th, and to notify those who have generously given monthly subscriptions that these should now cease. Among these subscribers the Committee alluded with gratitude to the particular generosity of Sir Alfred Pearce Gould.

SUBSCRIPTIONS TO THE SECOND APPEAL.

The following subscriptions have been received up to Monday, Jan. 27th:—

| | £ | s. | d. |
|---|---|----|----|
| Hampshire Pharmacists' Association, per Mr. C. H. Baker (making £256 5s.) | 6 | 5 | 0 |
| Dr. Charlotte B. Warner | 1 | 0 | 0 |
| Dr. Alfred Cox (monthly) | 1 | 1 | 0 |

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W. 1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary Comitia was held on Jan. 30th, Dr. NORMAN MOORE, the President, being in the chair.

The following candidates, having passed the necessary examination, were admitted as Members of the College: Dr. C. T. Champion de Crespigny, Dr. W. H. Grace, Dr. N. F. Hallows, Dr. G. R. Pirie, Dr. W. G. Porter, Dr. A. F. Rook, and Dr. T. W. Wadsworth.

Licenses to practise physic were granted to 64 candidates, who, having conformed to the by-laws and regulations, had passed the required examinations. Seven Diplomas in Public Health were also granted.

The following were elected councillors on the nomination of the Council:—Dr. H. Davy, Dr. H. Head, Dr. J. W. Carr, Dr. G. F. Still, and Dr. M. Craig.

On the nomination of the Council, Sir Francis Champneys was elected a representative on the Central Midwives Board. Dr. Sidney Martin was elected a representative on the Senate

of the University of London, vice Sir Frederick Taylor, resigned.

An address was received from the Royal College of Physicians of Ireland on the occasion of the quater-centenary of the College. A gold Browne medal was received from Dr. R. Crawford.

The PRESIDENT announced that he had appointed Dr. Crawford to be Harveian Orator and Dr. A. P. Beddard to be Bradshaw lecturer in 1919, and that the Council had appointed Dr. Aldo Castellani to be Milroy lecturer in 1920.

A report was received from the representative of the College upon the proceedings of the General Medical Council in the session held in November last.

The following report was received from the Committee of Management:—

The Committee recommend that the courses of instruction in pathology, practical pathology, and bacteriology, at the University of Cape Town be accepted as fulfilling the requirements of the Regulations, Section II., par. XXI. (d) and (h) 4, 5, 6, and 8.

The Committee of Management have received an application from the National Hospital for Epilepsy and Paralysis, Queen-square, and also one from the Hospital for Sick Children, Great Ormond-street, for recognition as teaching institutions for students in clinical medicine, and for part of the medical clerkship and surgical dressership. Both these hospitals are already recognised as teaching institutions by the Universities of Oxford, Cambridge, London, and Durham. The Committee of Management feel that it would be highly undesirable for any considerable amount of time spent on clinical instruction and in holding appointments in special hospitals to take the place of the period required in a general hospital, but they offer no objection to a period, not exceeding two months in all, for clerking and dressing being spent at these two hospitals or other special hospitals which may be hereafter recognised by the Committee of Management. With regard to an application which has been made by the Dean of University College Hospital Medical School to utilise this concession, the Committee of Management assume that the National Hospital and the Hospital for Sick Children will allow students from other medical schools than University College to go there in exactly the same way should the deans of their schools desire to send them.

The Committee have also received an application from the London School of Medicine for Women that students may be allowed to complete their gynaecological clerkships at the Elizabeth Garrett Anderson Hospital in which 50 per cent. of the surgical cases are gynaecological. The Committee recommend that this application be granted.

After some formal business had been transacted the PRESIDENT dissolved the Comitia.

MEDICINE AND THE LAW.

The Inquest on "Billie Carleton."

THE inquest held by Mr. S. Ingleby Oddie at the Coroner's Court, Westminster, upon the body of a young woman called Stewart, better known by her stage name as Miss Billie Carleton, was concluded on Jan. 23rd, the death inquired into having taken place on Nov. 27th. The unavoidable length of the proceedings was due not to any doubt that Miss Stewart died as the result of taking cocaine but on account of the desirability of determining by what means and through whom she had obtained the drug. In order to elicit all the facts bearing upon this point a large number of witnesses had to be called, and as many of these were naturally anxious to screen themselves or others their evidence had to be carefully sifted and examined. Those who had some knowledge of the matter were numerous, this being accounted for by the fact that the deceased was one of a group of people on terms of intimacy with one another, whose common interest consisted in their addiction to drugs, and whose common pursuit, in the case at least of some of them, consisted in scheming to obtain drugs for their own or for one another's consumption. An explanation given by a witness named Reginald de Veuille of his own anxiety to have cocaine for use on the night of the "Victory Ball," the night on which Miss Stewart took the dose or doses which proved fatal, may be noted. He said, in reply to a question by the coroner, "It was because I knew perfectly well that I could not get a single drink there." To this he added that he wished to get it for his own consumption only. It was upon this witness that the coroner's jury eventually laid the responsibility for supplying the drug to the deceased, in the following verdict:—

"We find that Miss Carleton died from an overdose of cocaine, self administered, by misadventure, and that she had no intention of committing suicide. We are of the opinion that the cocaine was supplied to her by De Veuille in a culpably negligent manner."

As this amounted to a verdict of manslaughter, the coroner issued a warrant for the arrest of De Veuille, who has since been brought before a magistrate, and comment upon the facts as affecting him must be withheld. The coroner's summing-up, however, of the law with regard to the supplying of cocaine in general contained passages which may be quoted, with a view to their comparison with any future enunciation of the principles to be observed in such cases. Mr. Oddie said—

"Somebody supplied her, that is certain, and it is an unlawful act for anyone to supply anyone else with cocaine. If one person supplies another he is doing an unlawful act. If the cocaine causes death he is guilty of manslaughter. If charged, it is a settled principle of law in this country that if a person does an unlawful act and by that act causes death, even if death was never intended or contemplated, he is guilty of constructive manslaughter."

The illegality of the act of supplying cocaine in the case before him, would arise, he explained, under regulations made under the Defence of the Realm Act, and in case the jury might feel disinclined to press hardly against a person infringing a law made more or less to meet the emergency of war, he proceeded to the following further definition of what might constitute manslaughter, saying:—

"If a person does a lawful act which is dangerous to life, and if he does it negligently, and if the jury think that that negligence is gross and culpable negligence, that it shows recklessness and indifference to consequences, and is so grossly negligent, that it shows the person doing it has a wicked mind, and if that lawful, though dangerous, act causes death, then the person doing it is guilty of manslaughter. That is settled law. The Common Law of England provides that people who do dangerous things must use reasonable care, and if the jury decide that such an act as supplying cocaine—which is a dangerous drug if supplied recklessly—negligently, grossly negligently—then you can return a verdict of manslaughter."

In the course of his summing-up the coroner referred to the relations between the deceased and a medical practitioner who had given evidence, and he expressed himself satisfied that this gentleman, as to whose conduct he admitted that he had felt suspicious, had, in fact, tried to persuade Miss Stewart to give up drugs. One of his letters to her, found among her papers, contained the passages:

"I'll do anything to save you from the bottomless pit of darkness, despair, and depression. Get over these lapses. Get over the influence and existence of the damned stuff. Leave it to do its useful work as a local anæsthetic and kill pain, not people."

The concluding phrase quoted by Mr. Oddie is a singularly apt one.

URBAN VITAL STATISTICS.

(Week ended Jan. 25th, 1919.)

English and Welsh Towns.—In the 98 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality was 15.0, against 16.0 and 15.5 per 1000 in the two preceding weeks. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 14.1, or 0.7 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 6.0 in Bury, 6.8 in Warrington, and 8.2 in Hornsey, to 23.2 in Wigan, 24.6 in Liverpool, and 28.0 in Hastings. The principal epidemic diseases caused 162 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 58 from diphtheria, 48 from infantile diarrhoea, 24 from whooping-cough, 13 from measles, 11 from scarlet fever, and 8 from enteric fever. The deaths from influenza, which had steadily declined from 7559 to 274 in the 11 preceding weeks, further fell to 222, and included 40 in Liverpool, 33 in London, 15 in Leeds, and 10 in Bristol. There were 6 cases of small-pox, 1057 of scarlet fever, and 1174 of diphtheria under treatment in the Metropolitan Asylums Board Hospitals and the London Fever Hospital, against 5, 1092, and 1145 respectively at the end of the previous week. The causes of 36 deaths in the 98 towns were uncertified, of which 9 were registered in Liverpool, 8 in Birmingham, and 4 in Darlington.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 18.1, against 18.6 and 17.0 per 1000 in the two preceding weeks. The 351 deaths in Glasgow corresponded to an annual rate of 16.4 per 1000, and included 13 from whooping-cough, 3 each from measles and diphtheria, and 2 from infantile diarrhoea. The 138 deaths in Edinburgh were equal to a rate of 21.4 per 1000, and included 12 from whooping-cough, 3 from measles, 2 from scarlet fever, and 1 from diphtheria.

Irish Towns.—The 179 deaths in Dublin corresponded to an annual rate of 23.0, or 0.9 per 1000 above that recorded in the previous week, and included 3 from infantile diarrhoea and 1 each from scarlet fever and diphtheria. The 145 deaths in Belfast were equal to a rate of 18.9 per 1000, and included 2 from infantile diarrhoea and 1 from diphtheria.

Correspondence.

"Audi alteram partem."

CROOKES'S LENSES.

To the Editor of THE LANCET.

SIR,—“Enquirer” and others may find useful a little further information on Crookes's lenses beyond that given in your editorial note (THE LANCET, Jan. 18th, p. 124). Although these lenses have now been for some years on the market, there appears to exist still a good deal of ignorance in the medical profession both as to their composition and their use.

Crookes's A or No. 1 is the glass most used in this climate, and its composition is: Fused soda flux, 83 per cent, and cerium nitrate 17 per cent. It is difficult commercially to get the cerium salt pure, there is present a small amount of didymium which gives the glass a brownish purple tint when viewed edgewise, and gives the whole glass a slightly greyish tint, but this tint is so slight that when worn in spectacles it is indistinguishable from ordinary glass. The value of this glass is that it cuts off the ultra-violet rays of transmitted light without any loss of luminosity. Any ordinary tinted glass, of whatever kind, cutting off the same amount of those deleterious rays is not only extremely unsightly, but also lowers the luminosity to a very marked degree. In photophobia, or fear of the glare of light (differing from photophobia, which is the fear of light), Crookes's No. 1 is invaluable, and myopes who have worn their correction made up with it appreciate it most highly. In work with incandescent gas and electric light it has a most softening and soothing effect. Another important characteristic of this glass is that it does not make the retina more sensitive to light when discontinued, which is not the case with ordinary tinted glasses.

Crookes's B, or No. 2, is only required when great glare is encountered, as in tropical climates or snow regions, or in diseases of the eye which call for smoked glasses. Its composition is slightly different from Crookes's A, having nickel and cobalt sulphate and urano-uranic oxide added in small quantities, and it is only transparent to 45 per cent. of incident light.

It is difficult to over-estimate the enormous benefit that these lenses give in correcting errors of refraction, and it is another cause of gratitude we owe to that “grand old man” of science, Sir William Crookes.

I am, Sir, yours faithfully,

Feb. 1st, 1919. ERNEST CLARKE, M.D., F.R.C.S.

MUCOID FORMS OF PARATYPHOID.

To the Editor of THE LANCET.

SIR,—Being on active service I have only just observed the article by Captain W. Fletcher, R.A.M.C., on Capsulate Mucoid Forms of Paratyphoid in THE LANCET of July 27th, 1918. I was particularly interested to read it, as I made a similar observation some time ago and recorded it in my annual report of the Enteric Convalescent Depot, Naini Tal, which was published in the Army Sanitary Reports, India, 1916. Like Captain Fletcher's cases, mine was also a carrier of *B. paratyphosus B*, and I satisfied myself that the organism was the genuine article. In my report I remarked that I was not aware of a similar observation having been made before.

During 1918 I made an observation on another carrier. I was making daily examinations of an officer who was a chronic carrier of *B. para. B*, and one day through press of work put off the examination of the plate, which had been incubated for 24 hours, till the next day, and meanwhile the plate lay on my table for another 24 hours. By this time I noticed that several colonies showed a secondary (mucoid) growth round their edges, giving the appearance of tiny thickly tyred wheels. Mindful of my former experience, I tested these colonies and proved them to be *B. para. B*. In this particular case the cultural peculiarity of the organism proved a great saving of labour, as it was only necessary to leave the incubated plate for another 24 hours at room temperature for the organism to demonstrate itself by its secondary growth. I never found, though I controlled the observation many times, that in this

particular case did any other organism show the same peculiarity. I should have mentioned that, like Captain Fletcher, the medium I used was Endo's.

The term "mucoid" would appear to be a better one than the one I used—viz., "gelatinoid," as it more accurately describes the appearance of the colonies, but it is just a question whether "zooglœic" would not more accurately describe this form of growth and I would suggest that it is an indication of attenuation. I am sorry I am unable at present to refer to my notes for more accurate details.

I am, Sir, yours faithfully,

J. C. KENNEDY.

Lieutenant-Colonel, R.A.M.C.

Mesopotamian Expeditionary Force, Dec. 28th, 1918.

CAUSES AND INCIDENCE OF DENTAL CARIES.

To the Editor of THE LANCET.

SIR,—As Dr. James Wheatley's figures with regard to the prevalence of dental caries among children have been cited and admittedly confirmed, it may be well to take note of his figures with regard to dental caries in adults. In a recent lecture he said: "Among 83 women, mostly between 25 and 30 years of age, examined by me for nursing scholarships, the average number of teeth decayed or lost was 17.6." Now, unless these figures are regarded as quite unreliable, it would appear that Dr. Harry Campbell's estimate is not "very excessive," but quite the contrary, and I trust we may not be debarred from further inquiry such as Major Nickolls Dunn urges, by anyone attempting to belittle the seriousness of the state of the teeth, or in any way seeking to hinder research for the truth. When those in authoritative positions know and teach the truth, the diet in the nursery at least will soon be changed; but, to quote from a recent editorial article in a dental journal, "until teachers of physiology in our medical schools recant the erroneous doctrines of diet and nutrition that have been the source of so much misplaced confidence during the last half-century on the part of the anxious-to-learn public, little can be done."

I am, Sir, yours faithfully,

Harley-street, W., Feb. 1st, 1919.

J. SIM WALLACE.

WAR DEAFNESS.

To the Editor of THE LANCET.

SIR,—Dr. P. McBride seems determined to deprive men suffering from war deafness of the chance of being cured by psychotherapy, as his letter to you of Jan. 25th is, I believe, the third communication to the medical journals attempting to prove that hysterical deafness rarely, if ever, occurs, whereas all who are familiar with the war neuroses know that the vast majority of cases of so-called shell-shock deafness are hysterical and therefore curable, even if complicated by some slight organic lesion, such as a perforated drum. I therefore welcome Captain E. Prideaux's letter of Feb. 1st, confirming what Lieutenant-Colonel C. S. Myers wrote on the subject on Jan. 18th. In the majority of our cases we have not investigated whether the hysterical deafness persisted in sleep, but this was proved quite clearly in two cases which I published with Captain E. A. Peters in THE LANCET on Oct. 6th, 1917. It cannot be too widely known that the old tests which were supposed to distinguish organic from hysterical deafness have proved most fallacious, and that every man suffering from "shell-shock deafness" ought to be given a chance of recovering under psychotherapy.

I was surprised to read Captain Prideaux's statement that there was a disposition for other symptoms to develop after recovery from hysterical conditions. This must clearly depend upon the method of treatment employed. If the simple method of psychotherapy, by means of explanation, persuasion, and re-education, which we have adopted in preference to all methods of gross suggestion, is used, such substituted symptoms hardly ever occur. Among several hundred cases which have been treated in this hospital new symptoms have not followed recovery in more than three or four instances, and in every case the secondary symptom was rapidly cured. On the other hand, it is a daily occurrence for the removal of one hysterical symptom to be immediately followed by the disappearance of other nervous symptoms, whether hysterical or not. For example, the cure of hysterical tremor or stammer, which may have lasted for many months or even for a year or two, at a single sitting is often

followed by the immediate disappearance of insomnia, war dreams, and headache, with which they have been associated during the whole period. In the same way the cure of hysterical paralysis of a leg will often be accompanied by recovery of power in the arm in hemiplegia without any treatment being directed to the latter. In the case of a man who had been totally blind for four and a half years after being blown up constant headache and extreme depression, as well as almost complete bilateral deafness, which had previously been regarded as organic, completely disappeared in 24 hours without any direct treatment, as a result of the cure of his blindness by explanation, persuasion, and re-education. I am, Sir, yours faithfully,

ARTHUR F. HURST,

Lieutenant-Colonel, R.A.M.C.

Seale Hayne Military Hospital, Newton Abbot,
Feb. 1st, 1919.

The War and After.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

THE usual quarterly meeting of the committee was held on Jan. 31st at 11, Chandos-street, W. Colonel Ewen Maclean was in the chair. Grants were made to the widows and orphans of four officers and to the widows and orphans of seven men of the rank and file. Widows or orphans of officers or men of the Auxiliary Royal Army Medical Corps requiring help should apply to the Honorary Secretary of the Funds at 11, Chandos-street, Cavendish-square, W. 1.

It is now officially announced that Colonel A. Webb, A.M.S., at present Assistant Director of Medical Services at the War Office, has been appointed Director-General of the Medical Branch of the Ministry of Pensions.

OBITUARY OF THE WAR.

SAMUEL WAUCHOPE MATTHEWS, M.B., B.Ch. N.U.I.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain S. W. Matthews, who died at Lindi, East Africa, on Nov. 15th, 1918, at the age of 31 years, was fourth son of the Rev. S. Matthews, of Belgrave-square, Dublin. Educated at the Wicklow Academy, where he was awarded several first places and composition prizes by the Irish Intermediate Education Board, he went on to University College, Galway. He held junior scholarships as an undergraduate and a senior scholarship in his final year, was chairman of the College Debating Society, captain of the cricket and hockey teams, and in 1910 was awarded the President's Medal for oratory. In 1913 he graduated in medicine at the National University of Ireland and was appointed resident at the Children's Hospital, Temple-street, Dublin. He volunteered for service with the R.A.M.C. on the outbreak of war and was sent to German East Africa, where fellow officers testify to his efficient work. Weakened by several attacks of malaria and jaundice he fell a victim to an attack of enteric fever. Captain Matthews was unmarried.



Captain ROBERT PERCY YOUNG, A.A.M.C., who was killed on Sept. 18th, was educated at Caulfield Grammar School, where he played in the cricket and tennis teams, and at Ormond College, Melbourne University, where he was a medical student from 1909 to 1913, and graduated M.B., B.S. in March, 1914. After a short period as resident

medical officer of a public hospital, he joined the A.A.M.C. in 1916, and was sent to Egypt, where he was attached to the 4th Divisional Ammunition Column at Serapheim. He was in England for a time in the early part of 1917 with the A.I.F., and at the end of June was sent to the 1st Australian General Hospital in France. From there he went to the front and was attached successively to the 1st Battalion, 1st Field Ambulance, 3rd Field Ambulance, and 10th Battalion. With this last unit he went into action at Jeancourt, and was killed while attending to the wounded on the first day of the last operations carried out by the 1st Australian Division.

Obituary.

SIR JAMES SAWYER, M.D., F.R.C.P. LOND.,
F.R.S. EDIN.,

CONSULTING PHYSICIAN TO THE QUEEN'S HOSPITAL, BIRMINGHAM.

Sir James Sawyer, who died at his residence at Hatton, Warwick, on Jan. 27th, aged 75, was the eldest son of the late James Sawyer of Carlisle, and was educated at Queen's College, Birmingham. He qualified as a member of the Royal College of Surgeons of England in 1866, and in the following year graduated in the University of London as M.B. with first class honours. He was then appointed resident physician and medical tutor at the Queen's Hospital, Birmingham, a post which he held for several years. In 1875, having proceeded to the M.D. London, he was appointed professor of pathology at Queen's College, Birmingham, where three years later he became professor of materia medica, holding the chair for seven years, when he became professor of medicine. In 1879 he was elected physician at Queen's Hospital, and became F.R.C.P. Lond. in 1883, and after 22 years' service he became consulting physician to the hospital. He was knighted in 1885. In 1908 he delivered the Lumsden lectures at the Royal College of Physicians of London on "Points of Practice in Maladies of the Heart."

He was a man of many activities, being ex-president of the Midland Medical Society, the Birmingham branch of the British Medical Association, the Birmingham Medical Benevolent Society, and the Birmingham Clinical Board. He was also founder and first editor of the *Birmingham Medical Review*, vice-president of the Therapeutics Section, International Medical Congress of London, 1913, president of the Warwickshire Chamber of Agriculture in 1902, and Justice of the Peace for Warwickshire and Birmingham. He was author of numerous contributions to practical medicine. He also took a strong part in Birmingham politics. He was president of the Birmingham Conservative Association in 1885, and in those forceful days he never became reconciled to the Conservative alliance with the Liberal Unionist Party.

Sir James Sawyer married a daughter of the late Rev. J. Harwood Hill, and leaves a widow and two sons, of whom the elder, Lieutenant-Colonel J. E. H. Sawyer, Administrator of the 1st Southern General Hospital, is assistant physician of the General Hospital, Birmingham.

DEATH OF DR. WILLIAM GEORGE KEMP.—Dr. W. G. Kemp, of Oakhurst, Hastings, died with tragic suddenness while in a tramcar on Jan. 24th. Dr. Kemp was born at Alnwick in 1846, and educated at King's School, Canterbury, and St. Bartholomew's Hospital. After qualifying M.R.C.S. and L.R.C.P. Lond., he was house surgeon at Nelson Hospital, N.Z., and in 1870 began practice in Wellington, N.Z., holding the appointment of surgeon to the Wellington Hospital, and having a wide consulting general practice. He was the first surgeon to perform ovariectomy in New Zealand, where he was highly esteemed for his skill and sterling character. He returned to England in 1892 and took the M.D. Durham, but retired from all practice shortly afterwards. Dr. Kemp married Charlotte, daughter of Dr. J. D. Greenwood, and leaves a widow, four sons, and three daughters. One daughter, a King's College Hospital sister, was killed by a German bomb while working at a Red Cross hospital in Belgium. One son is Major in the N.Z. Medical Corps, one Captain, R.A.M.C., and a third son is in medical practice in New Zealand.

PLAGUE and cholera are reported in the Indian gold-fields and are causing anxiety to the authorities.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination, held from Jan. 14th to 28th, the following candidates were approved in the under-mentioned subjects, but are not eligible for diplomas:—

Medicine.—J. H. Allan, Liverpool; G. A. E. Barnes and B. F. Behman, Univ. Coll.; T. G. D. Bonar, Guy's; Sarah Alleen Florence Boyd-Mackay, Royal Free; H. M. Brown, Guy's; E. B. Carter, St. Thomas's; C. K. Cullen, London; Sylvia Victoria Elman, St. Mary's; V. N. Fenton, Cambridge and London; H. H. Goodman, Leeds; C. Griffith-Jones, St. Bart's; K. A. Hardy, Charing Cross; W. B. Hargreaves, Manchester; M. S. Hashish, St. Bart's; H. C. Hopkinson, Cambridge and Manchester; R. Jenner-Clarke, London; S. Kelly, Manchester; Muriel Mercer Kenworthy, Royal Free and Liverpool; M. A. Keshvala, Hyderabad and Univ. Coll.; E. D. Macmillan, St. Bart's; A. A. R. S. Mansour, Charing Cross; J. S. Moore, St. Thomas's; Eva Morton, Royal Free; J. L. Nisbet, St. Bart's; A. A. Osman, Guy's; Sigrid Letitia Sharpe Pearson, Royal Free; G. A. Pennant, Bristol; Norah Dorothy Pinkerton, Royal Free; Enid Margaret Mary Quail, St. Mary's; W. A. Richards, Charing Cross; H. S. Robinson, London; A. E. Sawday, Guy's; A. H. Whyte, Durham; S. C. de S. Wijeyeratne, Univ. Coll.; Ethel Dorothy Will's, Manchester; M. Wong, St. Thomas's; and G. R. Woodhead, London.

Surgery.—R. J. Allison, Manchester; W. E. Bracey, Birmingham; T. Fernandez, Cambridge and Guy's; Margaret Hammond, Royal Free; B. C. Hardiman, Queen's Univ.; H. Kamal, King's Coll.; V. G. Mobile, Grant Medical College; C. F. Newman, Birmingham; J. S. Rogers, King's Coll.; M. L. Schroeter, Zurich Univ.; E. N. Shewell-Rogers, Cambridge and St. Thomas's; and E. R. Webb, Guy's.

Midwifery.—W. S. Adams, Birmingham; W. J. McB. Allan, Guy's; H. E. Archer, St. Bart's; B. A. Astley-Weston, Bristol; P. C. Brett, St. Thomas's; E. F. Brown, Birmingham; J. D. M. Cardell, St. Thomas's; I. J. Cruchley, London; G. L. Cutts, Guy's; Sarah Helen Davies, Royal Free; A. M. El-Mishad, King's Coll.; A. H. El Rakshi, Univ. Coll.; C. W. Emery, London; Kathleen Field and J. O'F. Fletcher, St. Mary's; W. T. Flocks, Guy's; L. P. Garrod, Cambridge and St. Bart's; St. G. B. D. Gray, Guy's; Dorothy Margaret Greig, Royal Free; Mary Isabel Alleyne Grimmer, Charing Cross; T. L. Hillier, Cambridge and St. Thomas's; F. G. Hobson, Oxford and St. Thomas's; Mabel Marian Ingram, Royal Free; S. W. Jeger, London; S. Kelly, Manchester; R. C. B. Ledlie, Guy's; J. N. Letich, St. Bart's; T. I. Makar, Middlesex; C. Nicory, St. Thomas's; J. L. Nisbet, St. Bart's; J. L. C. O'Flynn, St. George's; F. R. Oliver, Cambridge and St. Bart's; G. Packham, Cairo and Guy's; W. W. Payne, Guy's; F. F. Petersen, London; G. S. B. Philip, Charing Cross; J. Prujanaky, London; R. R. B. Roberts, Liverpool; H. T. Roper-Hall, Birmingham; R. B. R. Sanderson, St. Bart's; E. R. Sarra, Cambridge and London; H. N. Schapiro, Guy's; F. P. Schofield, St. Bart's; F. G. Spear, Cambridge and St. Thomas's; Doris Elsie Florence Stanton, Birmingham; J. G. Strachan, Toronto; A. Sudki, Birmingham; C. Suffern, Cambridge and St. Thomas's; S. R. Tattersall, St. Thomas's; R. Thursz, King's Coll.; W. A. Turner, Guy's; N. S. B. Vinter, St. Bart's; W. Walsham, St. Mary's; C. J. L. Wells and J. S. White, St. Bart's; A. H. Whyte, Durham; Octavia Margaret Wilberforce, Royal Free and St. Mary's; May Grant Williams, Royal Free; C. B. Wilson, Cambridge and Univ. Coll.; and A. E. Young, Bristol.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The following candidates having conformed to the by-laws and regulations and passed the required examinations have been granted licences to practise physic:—

Iskander Mikhail Abd-el-Said, Univ. Coll.; Wilfred Mark Anthony, St. Thomas's; Douglas Albert Raoul Aufranc, Middlesex; Percy Banbury, St. Thomas's; Hezekiah Barbash, Cambridge and St. Bart's; John Myles Bleckerton, Cambridge and King's Coll.; *Ursula Pousett Blackwell, Royal Free; Edward Phillimore Brockman, Cambridge and St. Thomas's; Jacob Brodetsky, London; Jean Bbo sy, Lausanne; Charles Henry Bubb, Guy's; Michel Henri Burnier, Lausanne; *Alix Jeanne Churchill, Royal Free and St. George's; Roger Helne Clarke, Cambridge and St. Bart's; Cecil Gerald Sedgely Corner, Madras and Univ. Coll.; Ahmad Rahimtulal Rhalak Dina, Bombay and Guy's; Geoffrey Barrow Dowling and Arthur Alan Fort, Guy's; Reginald Stafford Foss, St. Thomas's; Lionel Erulé Fraser, Cambridge and St. Thomas's; Joseph Pinkus Freilich, Univ. Coll.; Edward James Gaffney, Guy's; John Francis Gaha, Dublin and Univ. Coll.; Christopher Frank Good and Boris Abramovitz Morshovitz Gordon, London; Frank Gray, Cambridge and St. Bart's; Hubert Oliver Gunewardene, King's Coll.; Arthur Clare Halliwell and Arthur Thomas Hawley, Cambridge and St. Thomas's; Christopher Thomas Helsham, Durham and Guy's; Charles Harold Sterne Horwitz, Guy's; Gilbert Rashleigh Hull, St. Thomas's; Graydon Oscar Hume, Guy's; Tom Aubrey Jones, Cambridge; Henry David Kelf, St. Bart's; Francis William Kemp, Charing Cross; Gdal Lelzer Levin, Univ. Coll.; Philip Clermont Livingston, Cambridge and London; Pierce Lloyd-Williams and Ernest Kenneth Macdonald, St. Thomas's; John Alexander Mackenzie, Manitoba; Charles Fergus McLean, Cambridge and St. Thomas's; *Malati Madgavkar, Birmingham; Charles Dundas Maitland, St. Thomas's; Hugh Bethune Maitland, Toronto; Humphrey Ingilby Martiner, St. Thomas's; Samuel Raynor Meaker, Harvard; Anakara Vadakath Radhakrishna Menon, Madras and Univ. Coll.; David Richard Owen, Liverpool; Aerath Narayanan Nanoo Panikkar, Edinburgh; *Dorothy Priestley Priestley, Leeds; Rowan William Revell, Univ. Coll.; Rupert Idris Rhys, St. Bart's; Francis Henry Smith, Cambridge and St. George's; Francis Rupert Snell, St. Thomas's and Durham; Robert James Staley, Birmingham; Howard William Copland Vines, Cambridge and St. Bart's;

Arthur Elton Ward and Evelyn Cecil Whitehall-Cooke, St. Thomas's; Roger Lester Williams, Cambridge and St. Bart's; Sik To Wong, Guy's; Raymond Benedict Hervey Wyatt, Oxford and St. George's; Harold Blacow Yates, Cambridge and St. George's; and Frank Young, Guy's.

* Under the Medical Act, 1876.

Diplomas in Public Health were granted conjointly with the Royal College of Surgeons of England to the following candidates:—

George Alexander Birnie, John Alexander Drake, Thomas Hill Jamieson, Arcot Doraiswamy Loganathan, Keith Myrie Benoit Simon, Philip Smith, and John Wotherspoon.

THE MEDICAL MEETING AT WIGMORE HALL.—At the meeting of the medical profession which took place at the Wigmore Hall, Wigmore-street, London, on Sunday last, under the chairmanship of Mr. Fielding-Ould, a singular position was reached. The following resolution was proposed, seconded, and carried by 182 votes to 93.

In view of prospective legislation and the proposed establishment of a Ministry of Health, and having regard to the experience of the medical profession at the time of the passing of the National Insurance Act, the time has arrived when a body representative of the whole profession should be established, to watch its interests and be prepared to act in an advisory capacity as occasion demands.

The opposition to this resolution came from the representatives of the British Medical Association, who protested against the formation of any such body on the grounds that the medical profession had in the Association a body capable of acting in the proposed manner. The meeting being now definitely committed to the formation of a new body, the following resolution was proposed and seconded:—

That a provisional committee be now formed with the object of securing the election of such a body.

To this resolution the following amendment was proposed and seconded:—

"That this meeting of the medical profession, in view of the urgency arising from contemplated legislation, approves the recognition of the Parliamentary Medical Committee as the provisional committee to be entrusted with the task of drawing up the constitution of a body to develop along the lines indicated by the first resolution."

The amendment on going to division was negatived by 105 to 87 in a dwindling meeting. A second amendment to the resolution was then proposed in the following terms:—

"That in the opinion of this meeting no committee or organisation is capable of effectively representing the interests of the profession unless it is a registered medical trade union."

This amendment, being seconded, went to division and was announced by the Chairman to have been lost by 73 votes to 71, those being the figures of the count. The supporters of the amendment demanded a recount, which the chairman ruled to be impossible as members of the meeting who had voted had already left the building. The meeting refused to accept the chairman's ruling, who thereupon left the platform.

The result of the meeting, therefore, was to decide that a new body should be formed in accordance with the first resolution, while the second resolution, under which the actual formation of such a body should have taken place, was never reached, and the two amendments to it failed, to secure the necessary support. No action, it would seem, arises from the meeting.

THE CHILD-STUDY SOCIETY OF LONDON.—A course of five lectures on alternate Thursdays at 6 P.M. begins on Feb. 13th at the Royal Sanitary Institute (90, Buckingham Palace-road, London, S.W.1), when Mr. C. W. Kimmins, M.A., D.Sc., deals with the Significance of Children's Dreams. Dr. Eric Pritchard gives the concluding lecture on Home versus Institutional Training of Young Children. The lectures will be announced in the Medical Diary.

LEPERS IN INDIA.—An Indian auxiliary to the Mission to Lepers, which has been working for 44 years, has just been formed in Simla by Lady Chelmsford, wife of the Viceroy. The work of the Mission is to be the subject of a series of lantern lectures in important centres by the secretary of the Mission. The modern treatment for leprosy is to be promoted under a committee presided over by the Director-General of the Indian Medical Service. Sir Leonard Rogers and the secretary are drawing up a scheme for the trial of new remedies in the 60 leper asylums conducted by the Mission.

MEDICAL SOCIETY OF LONDON.—The programme for the second half of the 1918-19 season includes a paper by Sir St. Clair Thomson on the Operation by Laryngo-fissure (Feb. 10th) and by Mr. R. A. Ramsay on Congenital Hypertrophy of the Pylorus (Feb. 24th). On March 10th, 17th, and 24th Dr. W. H. Willcox, Colonel, A.M.S., will deliver the Lettsomian lectures on a subject to be announced later. The annual oration will be delivered by Sir John Tweedy on May 12th, following the general meeting. The ordinary meetings will be held at 8.30 P.M., the general meeting at 8 P.M., and the Lettsomian lectures at 9 P.M.

Appointments.

ROWLAND, STEPHEN, M.B. Edin., D.P.H. Camb, has been appointed temporary Tuberculosis Officer for Northampton.

Vacancies.

For further information refer to the advertisement columns.

Ashford, Kent, Grosvenor Sanatorium, Kennington.—Res. Asst. M.O. Birkhead Borough Hospital.—Jun. H.S. £170. Birmingham Corporation Pre-Maternity and Infant Welfare Work.—Female Doctor. £350. Bradford Union.—Asst. M.O. £400. Buenos Aires, British Hospital.—Senior R.M.O. and Asst. R.M.O. £500 and £450. Folkestone, Royal Victoria Hospital.—H.S. £150. Glamorgan County Council.—Inspection of Children in Public Elementary Schools.—Three M.O.'s. £400. Huddersfield Royal Infirmary.—Jun. H.S. £100. Johannesburg, South African School of Mines and Technology.—Professors of Anat. and Physio. £1000 in each case. King George Hospital, Stamford-street, S.E.—Res. H.S. £1 per diem. Leeds Hospital for Women and Children.—Hon. Asst. S. Liverpool Eye and Ear Infirmary.—Hon. Asst. Surgeons. Manchester, St. Mary's Hospital.—Hon. Asst. S. for Women. National Hospital for Diseases of the Heart, Westminster-street, W.—Res. M.O. £100. Newcastle-upon-Tyne Poor-law Infirmary.—Female Asst. Res. M.O. £250. Northampton General Hospital.—Jun. H.S. £150. Nottingham City Asylum.—Junior Asst. M.O. £300. Portsmouth Corporation Mental Hospital.—Jun. Asst. M.O. £250. Royal Free Hospital, Gray's Inn-road, W.C.—Clin. Asst. Royal National Orthopaedic Hospital.—Res. H.S. £100. St. Thomas's Hospital, S.E.—Asst. Bacteriologist. £400. Also Asst. Pathologist and Demonstrator of Morbid Anatomy. £250. Sheffield Royal Hospital.—Cas. O. £135. Also Asst. H.P. £120. Smethwick County Borough.—M.O.H. £800. Stoke-on-Trent County Borough.—Temp. Tuberc. O. £550. Sunderland Royal Infirmary, Children's Hospital.—Res. M.O. £200. University of London.—Examiners. Walsall General Hospital.—H.S. and Anaesthetist. £175. Warwickshire County Council.—Asst. M.O.H. £400. Western Ophthalmic Hospital, Marylebone-road, N.W.—Vacancies on Medical Staff. West Ham Union Sick Home, Forest-lane, Stratford, E.—Temp. Res. Asst. M.O. £6 6s. per week. Westmorland County Council.—Female Asst. M.O. £400. Windsor, King Edward VII. Hospital.—Asst. Hon. S. THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Wolston (Warwick).

Births, Marriages, and Deaths.

BIRTHS.

ABEL.—On Jan. 25th, at Radsleigh-street, W.C., the wife of A. Lawrence Abel, M.B., B.S. Lond., temporary Surgeon-Lieutenant, R.N., of a son. BATE.—On Jan. 28th, at Hove, the wife of Captain A. G. Bate, R.A.M.C. (T.F.), of a daughter. BELL.—On Jan. 28th, at Ravenscroft, Luton, Bedfordshire, the wife of Dr. R. D. Bell, M.C., of a daughter. CORDNER.—On Jan. 31st, at Gladholm, Andover-road, Cheltenham, the wife of Major E. R. Cordner, A.A.M.C., of a son. COWEN.—On Feb. 2nd, at Claremont-avenue, Blackpool, the wife of Captain (acting Major) E. G. H. Cowen, R.A.M.C., of a son. DAVID.—On Jan. 21st, at "Delmar," Babbacombe, Torquay, the wife of Captain W. E. David, M.C., R.A.M.C., of a daughter. HARRISON.—On Jan. 23rd, the wife of Captain W. L. A. Harrison, M.C., R.A.M.C., of a daughter (stillborn). HEDLEY.—On Feb. 1st, at Harley-street, the wife of Captain John Prescott Hedley, R.A.M.C. (T.), of a son. LONGSTAFF.—On Jan. 21st, at Thornhill, St. Mary's-road, Ditton-hill, Surbiton, the wife of Captain E. R. Longstaff, R.A.M.C. (S.R.), of a daughter. TAYLOR.—On Jan. 28th, at Church Circle, Farnborough, the wife of Major James Taylor, R.A.M.C., of a son.

MARRIAGES.

BLAIR—STEEGE.—On Dec. 27th, 1918, at St. Matthias Church, Richmond, Surrey, Charles James Longworth Blair, Surgeon, R.N., to Lillian, daughter of Mr. and Mrs. F. W. Steege, of Richmond. BOOTH—ALLER.—On Jan. 20th, at St. George's, Hanover-square, Major Ernest Brabazon Booth, D.S.O., R.A.M.C., to Marguerita Agnes, widow of Captain Leslie J. S. Allen, The Hampshire Regiment.

DEATHS.

FISHER.—On Feb. 3rd, at Walmer, Kent, James William Fisher, M.D., Inspector-General, R.N., aged 72. LOGIE.—On Feb. 1st, at the 1st Northern General Hospital, Newcastle-upon-Tyne, of pneumonia, Captain A. G. S. Logie, R.A.M.C. (T.F.), aged 53. TURNER.—On Feb. 3rd, at Lullington-road, Anerley, Robert Turner, M.B.C.S., A.M.S. (retired), in his 86th year. N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Wednesday, Feb. 13th.

SOCIAL EVENING: at 8.30 P.M.

Sir Arbuthnot Lane will discourse on some aspects of "Stasis." The Library will be open and visitors are invited to raise and discuss any question in which they are interested. (Tea, coffee, and smoking.)

Medical Officers of the Navy, R.A.M.C., the Dominions, United States, and the Allies are cordially invited.

MEETINGS OF SECTIONS.

Thursday, Feb. 13th.

NEUROLOGY (Hon. Secretaries—O. M. Hinds Howell, E. G. Fearnside): at 8 P.M.

Cases will be shown by the following:—

Dr. Frank Eve, Dr. Farquhar Buzzard, Captain Eldoch, and Mr. Eocyn-Jones.

Friday, Feb. 14th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.

Paper:

Dr. John Brownlee (Director of Statistics, Medical Research Committee): An Investigation into the Periodicity of Epidemics of Measles in the Large Towns of Great Britain and Ireland.

Members intending to dine are requested to send their names to Captain Greenwood, 7, Northumberland-street, W.C. 2, not later than Feb. 12th.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY, Feb. 10th.—8.30 P.M. Paper:—Sir St. Clair Thomson: Intrinsic Cancer of the Larynx. Operation by Laryngo-fissure and its Results (sequel to a paper read before the Society on Feb. 12th, 1912).

MEDICO-LEGAL SOCIETY, at the Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.

TUESDAY, Feb. 11th.—8 P.M., Council Meeting. 8.30 P.M., Papers:—Dr. Spillsbury: Criminal Abortion.—Dr. H. O. Ross (introduced by Mr. R. H. Wellington): A New Combined Test for the Presence of Albumin and Sugar in Urine.

HUNTERIAN SOCIETY, at the Rooms of the Royal Society of Medicine, 1, Wimpole-street, W.

WEDNESDAY, Feb. 12th.—9 P.M., Annual Oration:—Mr. H. Lett: John Hunter and his Influence on Urinary Surgery.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, Feb. 12th.—4.30 P.M., Paper:—Sir Frank Heath, K.C.B.: The Government and the Organisation of Scientific Research.

CHILD-STUDY SOCIETY LONDON, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY, Feb. 13th.—6 P.M., Lecture:—Dr. O. W. Kimmins: The Significance of Children's Dreams.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, in the Theatre of the College, Lincoln's Inn Fields, W.C.

WEDNESDAY, Feb. 12th.—5 P.M., Hunterian Lecture:—Prof. A. Fleming: The Action of Chemical and Physiological Antiseptics in Septic Wounds.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Clinics each week-day at 2 P.M., Wednesday, Friday and Saturday also at 10 A.M.

(Details of Post-Graduate Course were given in issue of Feb 1st.)

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Out-patients each day at 2.30 P.M.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

Emergency Post-Graduate Course in Neurology:—

MONDAY, Feb. 10th.—2 P.M., Medical Out-patients: Dr. Collier. 3.30 P.M., Lecture:—Dr. H. Howell: Anatomy and Physiology of Nervous System.

TUESDAY.—2 P.M., Medical Out-patients: Dr. G. Stewart. 3.30 P.M., Ward Cases: Dr. R. Russell.

WEDNESDAY.—2 P.M., Lecture:—Mr. Sargent: Surgery of Nervous System. 3.30 P.M., Lecture:—Dr. G. Holmes: Methods of Examination of Cases.

THURSDAY.—2 P.M., Medical Out-patients: Dr. F. Buzzard. 3.30 P.M., Lecture:—Dr. H. Howell: Anatomy and Physiology of Nervous System.

FRIDAY.—2 P.M., Medical Out-patients: Dr. G. Holmes. 3.30 P.M., Ward Cases: Dr. Tooth.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY, Feb. 11th.—4 P.M., Dr. J. L. Bunch: Some Common Skin Diseases. 5 P.M., Dr. W. K. Sibley: Syphilis and its Treatment.

WEDNESDAY.—5 P.M., Dr. W. Griffith: Skin Diseases in the Army.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.

Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—

WEDNESDAY, Feb. 12th.—5.30 P.M., Lecture II.:—Dr. M. S. Pembrey: Physical Training of the Open-Air Life.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), at the Lecture Theatre of the Medical School, King's College Hospital, Denmark Hill, S.E.

Course of Four Lectures on Malaria. Microscopic specimens and lantern slides will be shown at the two last lectures.

FRIDAY, Feb. 14th.—12 noon, Lecture III.:—Col. Sir Ronald Ross, K.C.B., K.C.M.G., F.R.S. Officers and Men of the Royal Army Medical Corps are invited to attend.

ROYAL INSTITUTE OF PUBLIC HEALTH; in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, Feb. 12th.—4 P.M., Right Hon. the Viscountess Rhonda: Women's Place in the Ministry of Health.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods. By R. Hayes, M.R.C.S. 3rd ed. 4s. 6d.

BALE, JOHN, SONS, AND DANIELSSON, London.

Science and Art of Deep Breathing as a Prophylactic and Therapeutic Agent in Consumption. By Shozaburo Otobe, M.D. 5s.

Lenzmann's Manual of Emergencies—Medical, Surgical, Obstetric: Their Pathology, Diagnosis, and Treatment. By J. Snowman, M.D. 15s.

CASSELL AND CO., London.

The Doctor in War. By Woods Hutchinson, M.D. 7s. 6d.

FROWDER, HENRY, AND HODDER & STOURGTON, London.

Trench Fever. Report of Commission, Medical Research Committee, American Red Cross. 2s.

Orthopaedic Effects of Gunshot Wounds and their Treatment. By S. W. Daw, Captain, R.A.M.C. (T.F.). With Foreword by Major-General Sir R. Jones and Appendix on Functional Disabilities by Dr. W. Outhbert Morton. 7s. 6d.

KIMPTON, HENRY, London.

Physiology and Biochemistry in Modern Medicine. By J. J. Macleod, M.B., and Others. 37s. 6d.

Röntgen Diagnosis of Diseases of the Head. By Dr. Arthur Schüller. Translated by F. F. Stocking, M.D. 21s.

Essentials of Medical Electricity. By E. P. Cumberbatch, B.M. 4th ed., revised. 7s. 6d.

Genito Urinary Diseases of Syphilis. By H. H. Morton, M.D. 4th ed., revised.

LEWIS, H. K., AND CO., LTD., London.

The Epidemics of Mauritius. With a Descriptive and Historical Account of the Island. By Daniel E. Anderson, M.D. Lond. and Paris. 16s. net.

LONGMANS, GREEN, AND CO., London.

Experimental Education. By R. Rusk, M.A. 7s. 6d.

UNIVERSITY OF LONDON PRESS, London.

Crime and Criminals. By Charles Mercier, M.D. 10s. 6d.

WRIGHT, JOHN, AND SONS, LTD., Bristol. SIMPKIN, MARSHALL, London. Pye's Surgical Handicraft. Edited by W. H. Clayton-Greene, F.R.C.S. 21s.

Communications, Letters, &c., to the Editor have been received from—

A.—*Arts Gazette*, Lond.; Major C. Armstrong, R.A.M.C.

B.—Dr. A. G. Bateman, Lond.;

Dr. R. A. Bennett, Torquay;

Surg.-Lieut. R. A. Barlow, R.N.;

Mr. R. Basu, Calcutta; Prof.

W. M. Bayliss, Lond.; Mr. T. W.

Bassett, Cork; Mr. C. Burroughs,

Atascadero, California; Board of

Agriculture and Fisheries, Lond.;

Dr. H. Brown, Lond.; Dr. O.

Burland, Liverpool; Dr. W. H.

Bowen, Cambridge.

C.—Chicago School of Sanitary

Instruction; Mr. H. Curtis,

Lond.; Dr. E. L. Collis, Lond.;

Mr. C. H. Cutting, Lond.; Mr.

F. P. de Caux, Lond.; Dr. G. S.

Candy, Great Bookham; Child

Study Society, Lond.; Capt.

C. M. Craig, R.A.M.C.; Col.

S. L. Cummins, O.M.G., A.M.S.

E.—Dr. H. A. Ellis, Middlesbrough;

Dr. J. Byre, Lond.

F.—Capt. J. G. Forbes, R.A.M.C.;

Mr. O. Fitch, Lond.; Capt. S. D.

Fairweather, R.A.M.C.; Sgt.

H. A. French, R.A.M.C.; Dr.

H. R. Fothergill, Hove.

G.—Dr. A. K. Gordon, Lond.;

General Medical Council, Lond.;

Acting Registrar of.

H.—Mr. T. G. Hill, Lond.; Bt.-Col.

L. W. Harrison, D.S.O.; Dr.

C. M. H. Howell, Lond.; Dr. I.

Harris, Liverpool.

J.—Mr. R. Jebb, Crowborough;

Journal of Immunology, Bal-

timore.

K.—Prof. H. Kenwood, Lond.; Dr.

W. Kidd, Cheltenham; Dr. W. H.

Kesteven, Kingston Hill.

L.—Prof. D. Ligat, Lond.; Mr. J.

Lewenstein, Hull; Dr. C. Lil-

lington.

M.—Dr. H. J. May, Southampton;

Capt. D. M. MacRae, S.A.M.C.;

Medical Society of London; Capt.

J. Miller, R.A.M.C.(T.)

O.—Dr. J. Oliver, Lond.; Mr. J.

Offord, Lond.

R.—Hon. N. C. Rothschild, Lond.;

Mr. T. G. Road, Blackgang;

Monseigneur G. Roussy, Paris; Dr.

J. W. Rob, Weybridge; Capt.

H. H. Rod, R.A.M.C.; Royal

Institution, Lond.

S.—Dr. O. F. Sontag, Lond.; Dr.

G. E. Shuttleworth, Lond.; Lady

Henry Somerset, Lond.; Dr. G.

oe Swietochowski, Lond.; Mr.

W. D. Spanton, Hastings.

T.—Dr. A. H. Thompson, Lond.

W.—Prof. A. J. Walton, Lond.;

Mr. H. Whitley, Colchester;

Major E. A. Wilcocke, A.I.F.

Y.—Miss M. Yates, Lond.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

LESSONS OF THE INFLUENZA EPIDEMIC.

ON Jan. 29th, at the Royal Institute of Public Health, a lecture on Lessons of the Influenza Epidemic was delivered by Captain T. Carnwath, D.S.O., medical inspector to the Local Government Board. He said that Dr. Bruce Low had pointed out that the epidemic had probably originated in the East, and not in Spain as was at first thought. Influenza in epidemic form was prevalent in France and in our own armies as early as April, 1918, the gradual diffusion of the epidemic from populous centres to outlying rural districts being explained by the short incubation period, the sudden onset, the high infectivity of the patients during the first days of illness, and the fact that no one seemed to enjoy immunity, at any rate when the epidemic had attained its pandemic stride.

A short account was then given of the clinical features of the epidemic in the summer outbreak, and Captain Carnwath then discussed the various preventive means at our disposal. Quarantine had been suggested as a means of controlling the disease, but was not very practicable. Some system of notification was required, together with opportunities for research. The importance of isolation as a measure of prophylaxis could not be too strongly urged, the isolation of severe cases being insisted upon; it would almost certainly result in a considerable diminution of the severity of the disease. The use of face-masks required more indisputable evidence as to their efficacy. The mouth and nose should be disinfected, especially after attendance at a crowded meeting or where a number of people were congregated together. On the other hand, it had been suggested that the natural resistance of the tissues to invasion by microbes might be lowered by lavage. It was impossible for any permanent health staff to cope unaided with a large epidemic of this kind, and in matters of public health it was necessary to obtain the co-operation of the public. For this there should be a greater diffusion of knowledge. The newspapers for a long time had had a city page dealing with financial matters, and he did not see why they should not publish a health page under competent medical editorship, where carefully considered accounts could be given of recent advances in preventive medicine. Research work, too, was greatly needed; we had been indifferent about it for too long in this country.

Sir Arthur Newsholme, who presided, said that the non-preventability of influenza had been cast as a reflection on preventive medicine, but that was answered by pointing to its triumphs over such diseases as typhoid fever, malaria, typhus, small-pox, &c. In the case of influenza we were waiting for further research to enable us in some way or another to secure immunity from attack, but possibly we should have to work for many decades on a much larger scale before catarrhal infections could be prevented. Influenza spread with lightning rapidity, and before it was recognised many thousand cases might occur; the disease got ahead long before communal means could overtake it. It was here that educational measures were necessary, measures which would also raise the standard of conduct of the ordinary man or woman whom one met in the tram or tube or in other places, especially with regard to sneezing and other insanitary habits. Until everyone adopted the most rigid precautions we could not hope for greater success. In the future he had no doubt that face-masks of a modified kind would be used more generally during epidemics. Every doctor and sick nurse ought to take that precaution. The palpebral, as well as the nasal, mucous membranes should be protected. If any further epidemic occurred it would be necessary to organise teams of doctors and nurses to go from one area to another. This had been done to some extent during the present epidemic, but such measures would no doubt in future have to be carried on on a larger scale.

Dr. W. A. Bond said that his experiences in dealing with the epidemic confirmed the doubt as to the causal nature of Pfeiffer's bacillus; it was desirable that as much research work as possible should be undertaken.—Dr. R. J. Ewart said that endemic and epidemic influenza were as distinct from each other as measles was from whooping-cough.—Captain Bailly spoke of his experiences in Mesopotamia, and said that he believed the severity of the disease was lessened by treating the cases in tents in the open air. With the exception of one case of bronchitis and one of slight heart affection, the symptoms had passed off normally within three to four days.

In his reply to a question by Dr. T. N. Kelynack, the lecturer said that the evidence from open-air sanatoriums was rather conflicting, some institutions appearing to have escaped, whilst others had been less fortunate.

COLONIAL HEALTH REPORTS.

Northern Territories of the Gold Coast.—The Census, completed in 1911, gave an estimated population of 361,806 to the Northern Territories—an average of 11.6 persons to the square mile. The returns for the Southern and North-Western Provinces were considered to be fairly accurate, but those of the North-Eastern Province fell far short of being correct, and it is estimated that not more than two-thirds of the inhabitants were enumerated. Systematic work is being carried out to render the next Census returns reliable in every respect. In spite of the heavy infant mortality, it is considered that the population at the present day is greatly in excess of that shown in the last Census returns. An outbreak of small-pox occurred in the North-Western Province in December, 1916, and continued into 1917. Some men of the Northern Territories Constabulary, with their families, were allowed to go to Tamale from the infected area, with the result that 10 cases of small-pox, with 3 deaths, occurred. The disease also spread from Wa to Bole, but in each case the outbreak was quickly suppressed. Small-pox again broke out in the North-Western Province in November, and it is thought that the natives spread the disease by vaccinating themselves from infected cases. In spite of repeated warnings a number of fatal cases of anthrax occur annually among the natives, due to their ineradicable propensity to eat the meat of cattle that have died from that disease. Leprosy is not on the increase, and while uncommon in the Southern and North-Western Provinces is of more frequent occurrence in the North-Eastern Province. The natives look upon it as "a visitation of Allah," but say that it shows no signs of spreading, and are generally averse to compulsory isolation. There are Government native hospitals established at Tamale, Salaga, and Bole in the Southern Province; at Wa, Tumu, and Lorha in the North-Western; and at Gambago, Zouagru, and Bawku in the North-Eastern Provinces. The first two hospitals mentioned are permanent buildings constructed by the Public Works Department; the others are built of "swish," or sun-baked bricks and are thatch-roofed, but little, if any, advantage is taken of them by the natives where medical officers are not in residence. The total of in-patients treated during the year was 178 and of out-patients 5045; there were 10 deaths and 22 operations under anaesthetic.

St. Helena.—The estimated civil population on Dec. 31st, 1917, was 3634, as compared with 3604 on the corresponding date in 1916. The birth-rate in 1917 was 26.41 per 1000, and the death-rate 13.7 per 1000. Of the deaths registered 14 were of persons over 70, 8 over 80, and 1 over 90 years of age. Early in the year there were epidemics of dysentery and influenza, both of a mild type and causing no deaths. Later in the year these maladies reappeared in a more serious form and directly or indirectly accounted for several deaths. A mild outbreak of chicken-pox occurred in December, necessitating the closing and disinfecting of all schools. There were no cases of diphtheria or enteric fever. Frequent shortage of food supplies threatened seriously to undermine the health and stamina of the people, especially those dwelling in and around Jamestown. The entire want of any qualified dental attention in the island, beyond the extraction of teeth by the colonial surgeon, tends to affect the general health in an increasing degree. The enervating climate, the nature of the water, and the high consumption of sugar by the inhabitants all tend to make dental caries very rapid, and to this want of dental attention the general low stamina of the inhabitants is mainly due. The keeping of pigs in Jamestown for the purpose of augmenting the food-supply was recommended by a majority of the members of the Board of Health, but was disallowed for medical and sanitary reasons, records showing that, in years gone by, diseases were traceable to the keeping of pigs in the proximity of dwelling-houses in the tropical climate and confined limits of Jamestown Valley. There were 139 admissions to the hospital during the year, 85 being males and 54 females; there were 11 deaths. The lady superintendent returned from leave early in the year. Of the three nurses, two completed their three years in the colony in March and November respectively, but nurses could not be obtained to relieve them. The former of these remained at duty until August, when she was obliged through ill-health to return to England; the latter was still on duty at the end of the year in spite of bad health. Dr. O. J. Murphy arrived from England in January as acting colonial surgeon.

A HOSPITAL FOR BOGNOR.

BOGNOR is to have a cottage hospital as a war memorial, Springfield House, Chichester-road, being the venue. This property is to be purchased for £3000, and £1000 are to be spent on its equipment. Mr. James Fleming is generously providing half of this total sum—viz., £2000, provided the remaining £2000 are raised locally, and, furthermore, Mr. Fleming has given £5000 for an endowment fund. At a meeting under the auspices of the urban district council, which is giving every support to the scheme, nearly £700 were raised towards the £2000.

Hunterian Lecture

ON

THE SURGERY OF THE SPINAL CORD IN PEACE AND WAR.

*Delivered before the Royal College of Surgeons of England on
Feb. 3rd, 1919,*

BY A. J. WALTON, M.S., F.R.C.S., B.Sc.,

ASSISTANT SURGEON AND DEMONSTRATOR OF ANATOMY, LONDON
HOSPITAL; SURGEON, POPLAR HOSPITAL, 2ND LONDON GENERAL
HOSPITAL, ETC.

MR. PRESIDENT AND GENTLEMEN.—I must first express to you my appreciation of the honour I have received in being asked to give this lecture. It is with some trepidation that I have undertaken the task, for on several previous occasions the subject of spinal cord surgery, in one or other of its many aspects, has been chosen for the Hunterian lecture. It is only because the present war has so altered our views on many points that I have felt encouraged to continue. On the one hand, our knowledge of the symptoms of spinal injury has been enormously increased and the indications for operation much more clearly defined. On the other hand, the prognosis after operation, and especially after the purely exploratory operation so often advised, when really contra-indicated, has been so relatively poor that its value in civilian lesions is tending to be unjustly depreciated. For these reasons I feel hopeful that a brief résumé of our present knowledge of those conditions showing partial or complete lesions of the spinal cord, to which time will alone permit me to give attention, will not be without value.

PATHOLOGICAL CHANGES IN NEOPLASMS AND OTHER LESIONS.

The pathological changes that occur in the cord are very variable. In the case of extra- and intra-dural tumours they consist at first, as Gowers¹⁸ pointed out, of a simple compression, followed by inflammatory changes at a later date. As evidence of compression the cord may be flattened, narrowed, and indented, but shows little or no change in appearance or consistence. Cases that recover after removal of the pressure show no other alteration to the naked eye, and it is probable that on microscopic examination no other change would be discernible. Our knowledge of such cases is, however, slight, for such will recover if treated correctly, or, if left to progress to a fatal termination, will have passed on to a later stage.

In more advanced cases the consistence of the cord alters. It is at first softened, but later its consistency may be increased. The affected part will be grey in colour and on microscopic section will show a general increase of interstitial tissue, degeneration of the nerve elements, and abundant masses of myelin. In extreme cases all the fibres may be destroyed, but there is never actual division of the cord itself. These changes may extend for one or two inches on either side of the lesion, and beyond them again the changes of ascending and descending degeneration can be discerned.

Although described as inflammatory in nature, it must be remembered that such changes are in reality only those due to the reaction around destroyed tissues. They are, in fact, reparative and only a means of replacing by scar the already destroyed tissues. They thus do not tend to spread, and may indeed be found in cases of compression where the dura has not been perforated.

The onset of these destructive changes is not due to the site of the lesion, but to the rapidity of its progress. Thus it is that in cases of malignant disease of the vertebrae the so-called inflammatory change is always more marked than the compression, whereas with slowly growing tumours and with tuberculosis of the spine the compression is the more marked factor. This is also clearly shown clinically, and it is well recognised that the more rapid the onset of paraplegic symptoms the less likely is recovery to follow the removal of the compressing agent. Even in inflammatory and malignant neoplastic formations the destruction of the cord is due to the rate of growth and the rapidity of the increase of pressure rather than to the nature of the lesion, for in

neither of these two conditions is the cord ever actually destroyed by an extension of the disease.

The same law still holds good, even if the pathological process is situated in the substance of the cord itself. Provided that the change is slow in onset it may exist for a considerable time and yet not lead to destruction of the cord, so that complete recovery may follow its removal. Elsberg^{9 10 12} has evolved a technique for the removal of such intramedullary tumours, and has recorded several cases where complete recovery followed the removal. A similar condition may even be seen in centrally situated inflammatory lesions, as in one of my cases where there was a centrally situated tubercular abscess which gave rise to a partial paraplegia. (Case I.) A case which I believe to be unique in being the only one on record where such an abscess has been opened and a complete cure followed, although Elsberg¹³ has reported a somewhat similar one where great relief followed operation.

PATHOLOGICAL CHANGES IN TRAUMATIC LESIONS.

If, then, the general principle be true that the amount of destruction of the cord, and therefore the prognosis, is dependent neither upon the site nor upon the nature of the lesion but upon the rapidity of its progress, very marked changes would be expected from a traumatic lesion where the whole course of the disease is almost instantaneous. Such, indeed, is seen to be the case.

The present war has given us unrivalled opportunities for observing large numbers of traumatic lesions, the pathological changes of which have been carefully investigated by Holmes.²⁰ He finds that where the cord has been directly injured by the missile or by displaced fragments of bone, a portion of the cord may be disintegrated, so that on incision of the pia a semifluid custard-like material may escape. Around this there are marked oedema and multiple minute hæmorrhages chiefly into the grey matter. The oedema may extend to several segments, and bears no definite relation to the severity of the wound. There are also distant lesions consisting of swelling of the axis-cylinders which may degenerate and disintegrate for a distance of four or five segments beyond the site of the lesion, and irregular patches of focal necrosis with the formation of curious cylindrical cavities, the contents of which consist of degenerating fibres and neuroglia.

Of even more interest than the above are the changes found in those cases where the cord has not been directly injured and the dura is unopened, where, in fact, the changes can only be attributed to concussion or commotion. Even in these cases Holmes²⁰ found that microscopically there were punctiform hæmorrhages with oedematous swelling and diffuse or focal necrosis, or there might even be complete destruction of all the functional elements of the cord.

Collier⁵ believes that the injury in these cases is due to a sudden rise of pressure, and states that the changes are always more marked in the lower part of the cord, as it is more closed below. He also describes two other pathological changes that may occur—namely, organisation of clot around the roots of the cauda equina and total necrosis of the distal portion of the cord, changes which in my experience have been extremely rare.

Claude and Lhermitte²⁵ have described in detail the changes which they have found to be present in cases of gunshot concussion where there was no visible injury of the cord or meninges. Locally they found, quite apart from hæmorrhage, patches of necrosis which they describe as insular necrosis. These patches are usually situated at the level of the injury, and in them the nervous elements, axis-cylinders, myelin sheaths, and nerve cells are in process of destruction or already completely transformed, whilst the neuroglial elements are proliferating and new blood-vessels are being formed. In some cases the interstitial elements themselves die and the focus is absolutely necrotic. In addition to the above there are diffuse changes which they have called "acute primary degeneration of the spinal tracts." Here the axis-cylinders are seen broken up in larger or smaller fragments and the nerve fibres have for the most part lost their parallelism; they are retracted, curled on themselves, and cross one another. Around the broken fibres are grouped the granular bodies of neuroglial origin. In the grey matter the ganglion cells are loaded with lipochromes and above all the protoplasm appears full of chromophile granules fused in large irregular clumps.

CLINICAL MANIFESTATIONS IN SPINAL TUMOURS.

The symptoms of benign or malignant neoplasms of the spine or of tubercular lesions will be relatively slow in onset, and therefore will tend to be focal in nature. There is thus to a certain extent a distinction according to the situation of the lesion, and the difficulties with which the surgeon or physician will be confronted are rather those of diagnosing the nature and site of the lesion than of determining whether or no a portion of the cord is destroyed. If the pressure can be removed there is every probability that the cord will recover.

In those cases where the disease commences in the vertebræ specific symptoms of such a lesion will not uncommonly be present, and will generally antedate those of interference with the function of the cord or its roots. In tuberculosis, for instance, the characteristic symptoms of pain, rigidity, and deformity will generally have been in existence for a long period before the onset of paraplegia. Similar symptoms may occur with secondary carcinoma, but here the local pain is the more marked. In my own series of cases of this nature severe aching pain, increased by exercise, was very constant, its onset in the majority occurring from three to six months before that of the other symptoms. In one case the period of existence of this pain was difficult to determine, for the patient's condition had been complicated by the presence of a renal calculus, which, added to the fact that he had an old kyphosis dating from birth, greatly increased the difficulties of diagnosis—so much so, in fact, that he was sent to hospital as a case of functional paraplegia.

This localised pain will in the later stages generally be replaced by the characteristic root pain, but the history of its presence in the early stages of the disease will be a valuable indication of the nature of the underlying lesion. For this reason every case showing an onset with such localised pain should be examined for the presence of a primary focus. As Elsberg¹² and Armour¹ have pointed out, this focus is most commonly in the breast, and the spinal lesion may even occur five to eight years after the breast has been removed. These cases are thus more common in women, and most frequently the spinal deposit is found in the dorsal region, and may here, as in one of my cases (Case 2) infiltrate several of the vertebral bodies.

Root Pains.

Of the actual cord symptoms root pains are usually the first to appear. Their presence has generally been taken as an indication that the tumour was extramedullary, but although it is true that severe pain of this nature is more common with such lesions, its value as a means of differential diagnosis is not constant. Elsberg¹¹ has shown that in his series root pain was not uncommon with intramedullary tumours, and in one of my own cases of this nature a laparotomy had even been performed for this symptom before the patient came under my care. Hunt and Woolsey²⁴ have found that if such pains are present in intramedullary lesions they are more likely to be unilateral, but in some cases, as in one of my own (Case 3) an extramedullary tumour may be associated with unilateral root pain. It will probably be found, however, that in the latter case the motor loss is confined to one leg, whilst the central tumour is more prone to cause bilateral paralysis.

In a similar way the presence of such pain is not a true indication that the tumour is situated posteriorly or laterally. Although the commonest intradural tumour is the subpial endothelioma, which is generally situated to one or other side and thus is likely to interfere with the posterior roots of one side only, yet even in these cases the pain may be bilateral, and in the rarer cases of osteoma or chondroma arising from the bodies of the vertebræ, of which I have had two cases, the lesion, although situated anteriorly, may give rise to root pain.

It must be remembered also that the position of this pain may, unless care be taken, even give rise to errors in the diagnosis of the level of the lesion. The level of the initial root pain is of the first importance in determining the site of the lesion, but the later symptoms may, as Elsberg⁷ has pointed out, suggest a much higher level owing to stasis of the cerebro-spinal fluid. It is thus essential that a careful history be taken of the early symptoms. On the other hand, Hunt and Woolsey²⁴ have described cases of extramedullary tumours in the cervical region where there was a distinct girdle sensation or constriction situated at the umbilical

level which in all cases disappeared after removal of the growth. Reynolds²⁰ has pointed out what may be the explanation of this—namely, that pain may be due to pressure on the sensory fibres in the cord, in which case it is referred to an area considerably below what one would expect from the situation of the cord lesion. In comparison with these vagaries of the root pains it must be kept in mind that in cases of chronic spinal meningitis, as described by Sir Victor Horsley,²¹ there may be a band of hyperæsthesia extending over a relatively wide area. In one of my patients, for instance, there was a bilateral hyperæsthetic area corresponding to the sixth to the tenth dorsal segments inclusive.

Motor Symptoms.

The motor symptoms will to a certain extent depend upon the site of the lesion. It is well known for instance that in cases of tuberculosis of the body of the vertebræ the earliest symptoms are generally those of spasticity followed by loss of power. These cases are, however, rather exceptional in that when the disease is extradural the pressure, probably owing to the interposition of the cerebro-spinal fluid, is usually more diffuse, and for the same reason the motor symptoms below are frequently bilateral. On the other hand, they are generally unilateral when the lesion is situated within the dura. In the common type of subpial endothelioma, for example, the Brown-Séquard syndrome is often found in the early stages. In both my cases of osteoma of the vertebræ the paralysis below the lesion was unilateral, for in these cases the tumour grew forward, so that it projected within the dura and was only covered by a thin layer of stretched-out tissue, and thus, although pathologically extradural, was clinically within this membrane. It may be said, therefore, that the presence of a local or unilateral paralysis is more in favour of an intradural lesion, and this is also true in those cases of bilateral symptoms where one leg was clearly affected previously to the other.

As a general rule the paralysis below the lesion is of the spastic type. Later, and especially with more rapidly increasing pressure, the limbs may become flaccid with loss of tone. It is on such cases that the older views of the association of a complete lesion with flaccidity and loss of tone were based. In view of the more recent knowledge gained by our experience of war surgery it is probable that these views will have to be modified. It is possible that this condition of flaccidity may be found when cases are more carefully examined to pass off and be followed by a condition of extensor spasm; if the disease be not, as is so often the case, associated with sepsis of the urinary tract.

At the level of the lesion itself there will be a segmental paralysis of the lower neuron type with wasting and complete flaccidity. This symptom is of great value in locating the level of the lesion in the cord, and may not uncommonly, indeed, be of more value than the level of the sensory changes. The local paralysis may, if located to the erector spinæ muscles, give rise to a scoliosis, to which treatment may in the earlier stages be alone directed, as in a case recorded by Harris and Bankart.¹⁷

Sensory Changes.

The presence of sensory changes below the level of the lesion is extremely common. Hecht¹⁴ even goes so far as to say that "Some disturbance of sensation, most commonly of the tactile variety, will be present in all tumour cases. I should even say must be present." He states that a positive diagnosis of a spinal tumour has never been made in the complete absence of objective disturbance.

The amount of sensory loss will vary with the site and rate of growth of the tumour. As in the case of the motor symptoms extradural lesions will usually give rise to a more diffuse pressure on the cord and hence all types of sensation are likely to be affected. Although in the more slowly increasing tubercular lesions there is no loss of sensation except in the late stages, in cases of secondary carcinoma the reverse is true, and the most common change is a rapidly increasing loss to all forms of sensation, until in a short space of time all are absent. Such, in my experience, has been the invariable condition with this lesion.

With intradural lesions it is usually believed that the extramedullary give complete loss of sensation, while the intramedullary show marked dissociation. This does not, however, appear to be true. It would rather seem that the dissociation is only found, as would, indeed, be expected,

with slowly growing tumours. Thus in my two cases of osteomata there was marked dissociation in the legs. In a similar manner it may be found that a slowly growing subpial endothelioma presents a marked dissociation, as in Case 4, where a tumour of 1 cm. diameter had developed in seven months, whereas in a second case of a similar tumour which in seven months had grown to a diameter of 3 cm., there was complete loss of all sensation. Rapidly growing extramedullary sarcomata, in my experience, have invariably shown complete loss of all forms of sensation below the level of the lesion.

With intramedullary lesions it is more common to find in the early stages a loss to pain, heat, and cold, with an absence of vibration sensation over an extensive area, whereas in extramedullary lesions this loss is generally over a much smaller area than that in which the other forms of sensation are absent. This, however, is by no means constant, and Elsberg¹¹ has reported cases among his series of intramedullary tumours where there was no dissociation and root pains were present. It is in the more rapidly increasing lesions, as, for instance, a hæmorrhage, that the widely spread loss is found, whereas with a slowly increasing syringomyelia the dissociation is most marked.

Just as the level of the root pains may be deceptive as a means of diagnosis of the position of the lesion so also may the sensory loss be other than would be expected. As a general rule the upper limit of the loss is apparently too low. Reynolds¹⁰ has pointed out that this is especially so on the back, and he quotes a case where a lesion at the level of the sixth dorsal segment gave rise to anæsthesia on the front of the body up to the level of the seventh dorsal segment, but on the back of the body only up to the level of the eleventh dorsal segment. It has already been noted that an increased collection of cerebro-spinal fluid above the lesion may give rise to a diagnosis of pressure at a level higher than the situation of the tumour.

Reflexes.

Until investigations had been carried out on the large amount of material supplied by this war the condition of the reflexes in lesions of the cord was regarded as settled. In spite of the work of Sherrington on animals and the clinical findings of Bramwell and Gowers the changes were regarded as simple and constant. In all incomplete lesions the reflexes in the part below were regarded as being exaggerated, the plantar reflex was up, ankle and knee clonus were often obtainable, and all the tendon reflexes were increased. In the segments corresponding to the actual lesion the reflexes, both superficial and deep, were abolished. There is no doubt that this is the characteristic condition with incomplete lesions resulting from tumours of slow growth but rapid changes—e.g., hæmorrhage into the growth may produce at first a picture of flaccid paralysis similar to that of the first stage of a complete division, but during the second stage of reflex activity the picture alters.

It is as regards the changes in the reflexes with complete lesions that our views have undergone the greatest change. In the later stages of a tumour there usually occurs, as described by Bastian, a stage with complete paralysis and absolute loss of all reflexes and loss of tone. Such had come to be regarded as the characteristic change with a complete lesion and any return of reflex activity was regarded as evidence either that the lesion had been incomplete or that recovery was occurring. It must be remembered here that since with a tumour there is never complete destruction of the cord it is therefore more difficult to prove that its functions are permanently destroyed. Moreover, these cases are but rarely the healthy subjects such as are seen with complete division from military wounds and being therefore more liable to suffer with septic complications but rarely pass from the stage of complete loss of reflexes. With the increase of our knowledge there is no doubt that these symptoms in advanced cases of spinal tumour will have in the future to be examined from a different aspect.

It is evident, therefore, that neoplastic formations interfering with the functions of the cord will give rise to focal symptoms which may remain localised for a very prolonged period. The destruction of the cord will vary with the rate of growth of the neoplasm, and in slowly growing tumours may be relatively slight, while in the more rapidly growing ones, although of relatively small size, much permanent

damage may be caused. Owing to the comparatively slow progress of the disease treatment will probably be sought long before there are symptoms of a complete transverse lesion. In attempting to determine the site of such a tumour careful consideration will have to be given to each group of symptoms, for any one alone may give rise to a fallacious diagnosis. The apparent limitation of the lesion to one or more tracts is not a certain indication of the site of the neoplasm, although it is well to remember that intramedullary lesions will tend to spread up and down the cord, whereas with the growth of an extramedullary tumour the symptoms will increase in width—i.e., to involve more and more tracts.

CLINICAL MANIFESTATIONS IN TRAUMATIC LESIONS.

With a traumatic lesion of the cord the problem is very different. Owing to the acuteness of the lesion, the whole process of which is almost instantaneous, there will at first be a complete loss of function of the portion of the cord below the injury giving rise to a flaccid paralysis, and this is true even in those cases where there has been only partial or even no anatomical destruction of the cord. It is only later when the lower segment has recovered from the condition of shock that it will be possible to determine whether the whole of the cord has been destroyed, or whether there is a local injury which may recover with or without the help of operation.

A consideration of the pathological changes has shown that where there is even partial destruction of the cord by the passage of the missile the lesions are widespread and that recovery is therefore unlikely to occur. Hence, if the paraplegia remains complete the prognosis will generally be poor. X ray examination will always be of great value, not only in determining whether the missile or displaced bone has actually destroyed a portion of the cord, but it may often enable the surgeon to ascertain the path of the bullet and thus diagnose with fair accuracy whether or no the cord has been in part or wholly divided. The greatest disappointment is, however, caused by those cases in which perhaps the dura has not even been perforated and yet a permanent paraplegia has been caused.

The majority of traumatic lesions are followed by the onset of paraplegia, but there are many exceptions to this rule. In civilian cases cervical injuries not uncommonly are free from spinal symptoms; according to Armour,¹ this is true of one-third of the cases. Campbell² has also reported six cases of fracture of the bodies of the lumbar vertebrae where there were no symptoms referable to the cord or cauda equina. In others, again, the symptoms may be only partial, but even here they may be progressive, and this from various causes. Holmes,²⁰ for instance, describes cases where the symptoms increase after two to three days, probably owing to the onset of secondary hæmorrhage or progressive softening. Mixer and Osgood²⁴ have also described late symptoms due to the gradual onset of myelitis by the irritation of long-continued abnormal position or callus formation. Neuhoof²⁹ reports the onset of paraplegia after many months of apparent cure owing to a rarefying osteitis of the bodies of the vertebrae, so that with the onset of spinal symptoms a kyphosis is caused—the so-called Kuemmel's disease.

In all of such cases the extent and site of the lesion are clearly defined, but where the paraplegia is at first apparently complete it is possible that only a portion or indeed none of the symptoms may be due to irrevocable injury of the cord. This is specially so in lesions of the cervical region, Marie and Benisty²⁶ describing a series of six cases due to wounds where the paralysis did not remain complete for more than a few weeks. Claude and Lhermitte²⁵ have likewise seen cases of this transient quadriplegia produced by concussion in the upper cervical region. In addition they describe cases of primary brachial monoplegia occurring both as a flaccid and secondary spasmodic type. It is usually associated with subjective or objective sensory disturbance of radical distribution which is often very obstinate. In other cases there is a brachial diplegia following injuries of the nape of the neck, so that the curious condition may be seen of a man standing and walking about with the completely paralysed upper limbs hanging inert by his side. Here also there are sensory changes, the deep sensibility and tactile sense being chiefly affected. There is frequent want of coördination of the movements of the lower limbs noticeable in the erect attitude, and becoming manifest in the upper limb as

movement reappears, all manifestations of cerebellar nature. A similar condition of temporary paraplegia may follow lesions of the dorsal region, the motor and sensory functions, apparently much involved, being re-established to some extent after a few weeks.

Since the whole question of operative interference will depend upon the diagnosis of an incomplete lesion it becomes a matter of considerable practical importance to determine upon what symptoms such a diagnosis can be made. It is becoming more and more clear that in the early stages there are no distinctive symptoms. In either case there may be within a day or two of the wound a complete flaccid paralysis to the level of the lesion, sensory loss to a similar level, the absence of all reflexes, and retention of urine. In those cases where there is return of some form of sensation and of motor power it is evident that the lesion is incomplete. It is in the less well defined cases where there is alteration in the reflexes alone that the greatest errors have arisen, and many such cases have been operated upon because it was believed that the lesion was incomplete, whereas there was in fact a complete division of the cord. On the other hand, the change in the nature of the reflexes is often the first indication that the injury is only partial and that an operation should be undertaken. It is the failure to recognise these points of distinction between complete and incomplete lesions, and the tendency to operate on those cases where the cord is destroyed for one or more segments and where therefore the prognosis is hopeless, that has brought discredit upon this branch of surgery.

Reflexes.

The changes in the reflexes have been fully described in a most able paper by G. Riddoch,³¹ which should be consulted by every surgeon and physician interested in this type of injury. He shows that in cases of acute trauma there are three stages in the clinical picture.

Firstly, there is the period of flaccidity, during which no distinction can be made between a complete and an incomplete division. There is a flaccid paralysis of all the muscles below the level of the lesion with loss of muscular tone, complete loss of all forms of sensation to a similar level, and the abolition of all spinal reflexes, the only exception to this latter being tonic contraction of the sphincters of the bladder and rectum (probably the internal sphincters supplied by the sympathetic fibres).

Secondly, there is the stage of reflex action during which the differential diagnosis can be made. If the lesion is complete there is a gradual reappearance after one to three weeks of the flexor reflexes. At first only induced by noxious stimulation of the skin or deep tissues, they are later brought out by the slightest touch or even by jarring of the bed. At the same time the reflexogenous area rapidly increases, so that in a short time stimulation of any portion of the skin almost up to the level of the lesion may induce dorsiflexion of the toes and flexion of the ankle, knee, and hip. The mass reaction may even spread to the abdominal muscles and bladder, and generally is associated with a similar flexion reflex of the other leg. This flexion reflex is not followed by contraction of the extensors, as it is in cats and dogs. Should the knee-jerk, ankle-jerk, and ankle clonus be present they always appear later than the flexion reflex, and the knee-jerk shows a quick falling away of the contraction of the extensors. With the complete establishment of the flexor reflexes there are involuntary flexor spasms of the legs, return of some muscular tone, and automatic action of the bladder and rectum. Case 5, which has been reported in full by Riddoch,³¹ shows clearly the nature of these reflexes.

It is the appearance of such a picture as described above which has not only often led to the belief that the lesion was incomplete, but has given rise to the hope that recovery has commenced after some operative measures have been undertaken. When the physiological division is incomplete the reflexes are very different, and this is even so in those cases where there is still loss of voluntary power and sensation. The postural or static reflexes recover at the same time as the flexors, so that the flexion movements are much more gentle and controlled owing to contraction of the extensors, and may be accompanied by extension of the knee and plantar extension of the toes of the other leg. After a short period the stimulated leg extends and the opposite leg flexes, giving a diphasic or stepping movement. The reflex is not so widespread—i.e., local signature is present, so that

the abdominal muscles are not involved, and the limbs lie in the bed extended at the hip and knee. In fact, as a rule the flexion reflexogenous area is limited to the periphery, and above this nociceptive stimuli give extension of the limbs. The knee-jerks are present and well sustained, and there is a definite extensor thrust on dorsiflexing the ankle. Case 6 is a good example of such a lesion and shows clearly the differences in the character of the reflexes from those in Case 5.

The third stage is that of the presence of septic complications, and its onset may be delayed for a prolonged period. In the presence of septic broncho-pneumonia, pyelitis, or bed-sores the reflex activity may be diminished and the limbs pass again into a stage of flaccidity, to be replaced by the onset of reflexes as the sepsis passes off.

Progress of Cases.

A certain number of cases may pass through the stage of flaccidity, and, having been clearly identified in the stage of reflex activity as incomplete lesions, may, without operative interference, make steady progress towards recovery. At a later stage, usually from one to two years after the infliction of the wound, progress may be interrupted or a recession occur and at operation the characteristic appearances of meningitis serosa be divulged. The presence of such a complication can generally be determined by the nature of the symptoms. The area involved in the root pains will increase, so that instead of being limited to one or two segments, five or six may be involved. There will be a steady increase of the spasticity, either flexor or extensor, and a corresponding decrease of voluntary control. The sphincters, however, will be but rarely affected, so that if the sphincter control be regained it will not be again lost. In some cases, however, if the lower sensory roots are affected true rectal incontinence may be simulated by loss of anal sensation.

INDICATIONS FOR OPERATION.

Before any operation upon the cord is undertaken the surgeon must have clearly in view what benefit is likely to accrue to the patient by such intervention. It would appear to be self-evident that it is useless to remove an aseptic bullet when the cord has been completely divided, or a tumour when the functions are irrevocably destroyed. A review, however, of published cases shows that these points are not kept clearly in mind, and many cases are subjected to operation when there is no possibility of improving the conditions.

Neoplasms and Other Lesions.

A consideration of the pathological and clinical factors makes it clear that the problem presented by the slowly progressive neoplastic cases is very different from that with the traumatic lesions. In the former the damage is almost wholly due to pressure, so that the removal of such pressure is likely to be followed by a complete cure. This may be true even when the symptoms of paraplegia are complete, provided that they have only been present for a short time and there are no septic complications such as cystitis or bed-sores. It is only in the later stages that the destruction becomes complete and return of function impossible. The slower the progress of the disease the less likely is it that inflammatory or degenerative changes have taken place in the cord. This is true even for intramedullary lesions of slow growth. It is now clear that many such lesions may be operated upon with a very good chance of removal and a complete or nearly complete recovery of the functions of the cord. The problem here, then, is relatively easy of solution. The rule will be to operate and remove the pressure and to operate at as early a stage as possible before any permanent damage has been done to the cord. One has rather to consider what are the exceptions to the rule. It must be remembered here that a well-conducted laminectomy carried out with careful technique where there is no septic wound is a proceeding almost devoid of all risk.

The first group of cases in which laminectomy should be postponed or not undertaken is that in which the lesion commences in the bone. Of the two main varieties tuberculosis is almost certain to be cured by rest and adequate orthopaedic measures. It is only when such measures have been carefully undertaken and have failed that operation for the relief of paraplegia should be considered. Neoplasms, on the other hand, if capable of being diagnosed as situated within the bone, are almost certain to be malignant and

generally secondary to carcinoma elsewhere. Operation will therefore never be undertaken in the hope of effecting a cure, and only very rarely as a palliative measure—e.g., for the relief of severe root pains.

Before operation is undertaken, the possibility of the symptoms being due to acute myelitis or a softening of infectious origin should always be considered, for in such cases the progress will probably only be accelerated by operation. At the present time cases of disseminated sclerosis should always be eliminated as there is no evidence that such a condition can be relieved by these measures. The elimination is not always simple. In one of my own cases there were well-defined focal symptoms of a lesion at the level of the fifth lumbar segment, the only symptoms pointing to disseminated sclerosis being the presence of a well-marked lateral nystagmus. Syringomyelia as a general rule is too diffuse to be relieved and the operation should therefore only be undertaken after careful consideration if there are definite level signs. All other cases, whether the symptoms point to an intra- or extra-medullary lesion, should be operated upon without delay.

Traumatic Lesions.

When the damage is due to injury the problem is very different, and even before our knowledge had been increased by the experience gained in this war many surgeons were becoming doubtful as to the value of operative measures. We were passing through an intermediate stage in which the views of surgeons, as expressed in their writings, were very diverse. Thus, on the one hand, Sir V. Horsley,²² Schachner,²² and Armour¹ advocated early operation, stating that in all cases of doubt an exploration should be carried out. At the other extreme Neuhof²³ took a very conservative view, and after discussing the contra-indications only advised interference where there was evidence of progressive intradural hæmorrhage, as shown by repeated lumbar puncture or unquestionable proof by the X rays that a fragment of bone was encroaching upon the spinal cord at the level suggested by the symptoms.

The majority of surgeons such as Hughes²³ and Elsberg⁹ adopt, however, a somewhat intermediate attitude, and whilst decrying operative intervention in the early stages, suggest that it is indicated when there are signs of recovery, pointing to the fact that the cord has not been wholly divided. In regard to the evidence of an incomplete lesion, a statement of the latter surgeon is of considerable interest when compared with the work of Riddoch.³¹ He pointed out that an upgoing movement of the toes replacing a downgoing movement when the sole is scratched, is of very great significance as evidence of the transmission of some nerve impulses through the cord. This had been generally accepted until Riddoch pointed out its fallacy. This latter observer has made clear that this change is simply the first stage in the appearance of the flexion reflex. The various stages in any lesion, whether complete or incomplete, when the cord is passing out of the influence of shock, are probably as follows. On scratching the sole of the foot the earliest response is a downgoing adduction movement of the toes; later with this the hamstrings can be felt to contract. Later still the toes move up and abduct, the foot is flexed at the ankle, and the hamstrings and the flexors of the hip contract.

A study of the pathological changes shows that in these traumatic cases, in the early stages, at least, the damage is practically never due to pressure. In both the civilian and military lesions what damage there is is done at the time of the injury, and is due to the momentum of the body. Any increase in the destruction of the cord, if it appear within a short time, will be due to inflammatory changes secondary to the infection of the wound, or if due to long-continued irritation of a foreign body, either metal or bone, will only appear after a prolonged interval. It will therefore be seen that there is no indication for immediate operation for the purpose of removing depressed bone or metal. These structures have already done all the damage they will do, and their mere removal will do nothing to restore the portion of cord already destroyed. On the other hand, the operation may do much to depress further the already lowered vitality of the patient. If, however, the damage is merely due to concussion and the cord is not completely divided, a foreign body may, after a prolonged period, give rise to secondary changes which may cause permanent damage to the cord, and hence its removal becomes imperative. In other words,

operation should not be undertaken until there is evidence that the lesion is incomplete, but when such evidence is present interference should not be delayed.

It is therefore of considerable importance that the points of distinction between a complete and an incomplete lesion, as enumerated by Riddoch,³¹ should be clearly understood. In my earlier series of war lesions it was my custom to operate upon the majority of cases presenting evidence of a lesion of the cord, and nothing has been more disappointing than those cases where there was a bullet, a piece of metal, or a piece of bone lying outside but compressing the uninjured dura, with the cord apparently intact. In not a single case showing no previous sign of recovery was there any progress after removal, but if operation had only been undertaken when there was some such evidence that the cord was not completely divided, then a marked progress, even if not complete recovery, followed the operative measures.

Selection of Cases for Operation.

Hence it may be stated that in the early stages no operation should be undertaken unless there is some sign of recovery or the lesion is incomplete, in which case the earlier the operation is performed the better. There may be an apparent exception to this rule. It is possible that in certain cases presenting an irregular septic wound operative steps in line with those carried out for other wounds and aiming at the excision of the wound and septic focus would be of considerable use in the prevention of meningitis. They would be instituted solely for the prevention of infection and not for the removal of pressure, but the full technique of such a method would, of course, include the removal of any missile or displaced portion of bone. If any such series of early operations have been performed their results have yet to be published.

In later cases the problem is much more simple. Should symptoms develop at a later date they will be due either to the collection of inflammatory exudates, to the contraction of scar tissue, or to the excessive formation of callus. In each case they are directly due to pressure for the relief of which an operation should be performed without delay. It may occasionally happen that even where there is evidence of complete division of the cord the presence of severe root pains may make the patient's life unendurable, and since such cases may otherwise live in comparative comfort for three or more years an operation devised solely for the relief of this pain will be quite justifiable.

A word must be said here about operations undertaken for the purpose of repairing an injured cord either by suture or by grafting in other, usually heterogeneous, cord tissue. Such methods have been advocated²⁷ but, unfortunately, the details given of the cases were so meagre as to be of but little value, and although great stress was laid upon the condition of the reflexes they would appear to be only those which would be expected to be present in a cord which was recovering from shock after partial division. All available evidence must be taken as absolutely negative to the possibility of any such recovery—a recovery which could, indeed, not be expected—occurring after suture or cord-grafting. It should never, therefore, be advocated, for not only is it a distinct risk to the life of the patient, a source of disappointment to himself and his friends, but it is also likely to bring the operation of laminectomy, performed for whatever cause, into considerable disrepute.

OPERATIVE TECHNIQUE.

In an operation of this nature the technique will vary considerably in the hands of individual surgeons, and as each man perfects his own methods so will it be found that equally good results will follow. There are certain details, however, which the extensive experience provided by the present war has shown to be important.

The first essential is a wide exposure of the lesion. The incision should be at least six to eight inches long, but whether made as a straight incision or as a lateral flap will depend upon the circumstances of the case. The first method will give less hæmorrhage as fewer subcutaneous vessels will be divided, but with a mid-line wound is more likely to pass through the infected focus and does not give so firm a scar if any mild infection be present. It may therefore be said generally that the vertical mid-line incision should be the one of preference, but should be replaced by a lateral flap if there be an old mid-line wound. If the wound be recent and an operation be considered necessary the incision will be in the line of the wound, the treatment

being directed rather towards the sterilisation of the wound than to the exploration of the spinal cord.

The erector spinæ muscles having been separated from the spines and laminae, for which purpose a wide-bladed sharp chisel will be found most useful, the spines should be removed with powerful cutting forceps, leaving the surface of the laminae as smooth as possible. Here again a wide exposure is essential. In every case at least four spines should be removed, and not uncommonly it will be preferable to take away five or six. The risk is not increased thereby, and nearly all the difficulties that may be experienced are due to the fact that insufficient spines have been removed. In the preceding stages there is often a considerable amount of hæmorrhage, which is mainly venous and can readily be controlled by packing the wound with gauze. Occasionally a few points may have to be tied.

Many different methods have been advocated for opening the canal. The safest and most rapid will be to trephine a healthy lamina, preferably not directly at the site of the lesion, so that opposite the trephine opening the dura will be free from the bone. The circle of bone having been removed the dura is freed from the under surface of the lamina above and below with a Horsley's elevator and the bone divided with sharp, narrow-bladed bone forceps. At least three laminae should be removed, so that adequate exposure is obtained. The opening in the canal is now widened on either side with guillotine forceps in its entire length, and all fat and blood-clot carefully removed from the underlying dura. The extradural space can now be freely examined for any loose fragments of metal or bone, or for any other abnormality and the character of the dura, whether thickened or adherent, whether pulsating or not, noted.

The question will now arise as to whether or no the dura should be opened. If it appear abnormal—that is to say, if it be thickened or show no pulsation this step should unquestionably be undertaken. It is in those cases in which a lesion is clearly situated extradurally and the dura and cord appear normal that difficulty will arise. The natural tendency is to feel that with the removal of the extradural lesion everything has been accomplished and nothing further should be done. Provided, however, that there is no septic extradural focus it will always be better to examine the cord. The lesions of this war have shown especially that even with an uninjured dura there may be gross change in the underlying cord, and although in such cases but little could be done of a curative nature, yet even in them there will be no increased risk, and much help may be obtained in giving an accurate prognosis. If there be a definite septic focus outside and no visible lesion of the cord or dura it will be better not to open this latter structure.

Before the dura is incised all bleeding should be controlled and all blood-clot removed. A mid-line incision is then made with a sharp tenotomy knife, care being taken that the arachnoid is left untouched. If healthy, this latter structure will bulge through the dural incision as a clear transparent bladder filled with cerebro-spinal fluid, and any increase in the amount of fluid or abnormal adhesions will be clearly discernible. Having been examined it can be divided and the cerebro-spinal fluid allowed to escape. If the fluid had been under pressure pulsation, previously absent, may now return.

The cord is examined and any extra- or intra-medullary change noted. Extradural tumours will be clearly defined and may be removed, every care being taken that the cord is manipulated as little as possible. If it be necessary to displace it, it should be lifted by one of the slips of the dentate ligament. Should the presence of an intramedullary tumour be shown by a localised swelling of the cord, a small vertical posterior incision should be made and the tumour allowed slowly to extrude, so that, as described by Elsberg,¹⁰ it may be removed by a second operation after seven to ten days' interval. Even if the tumour be irremovable by such methods the case recorded by Clarke and Lansdown⁸ would hold out hopes that improvement might be looked for by the application of radium at this stage.

In cases of injury examination should be made for the presence of foreign bodies or portions of bone in the substance of the cord, for, provided that the symptoms were those of an incomplete lesion, the removal of such a foreign body may be followed by very marked improvement, as in one of my own cases where a piece of bone was embedded in the posterior columns, giving a Brown-Séquard paralysis, which largely cleared up after removal of the fragment, and in a remarkable case reported by Schachner,³² where the removal of a .22 bullet from the posterior columns was followed by a marked recovery.

The presence of an intramedullary hæmorrhage may be indicated by a swelling of the cord, in which case improvement may follow a small posterior incision and evacuation

of the blood (Allen's method). It will often be found, however, that such an incision will be followed by the escape of a custard-like material, showing that the cord is disintegrated and recovery impossible.

If the operation has been performed for the relief of root pains care should be taken that a sufficient number of roots are divided. This is more especially so if the underlying lesion is a meningitis circumscripta, in which case it may be necessary to divide as many as five or six in order to give relief. At the completion of the operative steps upon the cord the dura should be sutured with a few fine catgut sutures, except in the case of serous meningitis, when it should be left open for the fluid to drain into the muscles. In all cases, and especially in this latter condition, the muscles must be carefully closed in layers to prevent any subcutaneous collection of cerebro-spinal fluid, which not uncommonly has a very irritating effect upon this tissue and may cause the wound to break down. Unless there is deep sepsis it will never be necessary to drain the wound.

APPENDIX: ILLUSTRATIVE CASES.

Tubercular Abscess in Substance of Cord.

In this case of tubercular abscess in the substance of the cord operation was followed by complete recovery.

CASE 1.—A male child, aged 5, was admitted to hospital on June 26th, 1916. One year before admission he developed pneumonia, which was followed by a left-sided empyema. After operation he remained well until six weeks before admission, when he fell down whilst playing with a hoop, and has been unable to walk since. The difficulty in using the legs had increased, and for three weeks he had had incontinence of urine.

He was well developed mentally and physically, and there were no signs of active trouble in the left lung. He was unable to walk alone and on being supported stood with a wide base. On attempting to walk the legs were moved with a high-stepping gait, the feet were plantar flexed, and he was unable to get his heels to the ground. All movements of the legs were spastic, very irregular, and ataxic, so that he could move them but little. The reflexes were all increased in the legs, the plantars being definitely up, and ankle clonus being easily elicited. The lower abdominals were greatly increased, but the upper were normal. The arms were normal in all respects.

Sensation appeared to be affected but little, but the results of examination were doubtful in so small a child. There was incontinence of urine and faeces. The spinal column showed no change in shape or rigidity and an X-ray photograph gave no evidence of spinal disease, but there was a cavity in the head of the left sixth rib suggestive of tubercular osteitis.

Operation was performed on June 28th.

The spines of D. 3-10 were removed and a small cavity, quite localised and apparently tubercular, opened in the head of the sixth rib. On removing the lamina of D. 5 the cord was seen to be swollen opposite its lower border. Free exposure showed that this swelling extended to the upper border of D. 7. Above this swelling the cord pulsed, but below there was no pulsation. The meninges were opened above, and here a normal cord was seen, but below at the site of the swelling it was firmly fused with the meninges. The swelling was carefully opened by a vertical mid-line incision on its dorsal aspect, and about half a drachm of pus removed from the centre of the cord. The wall of the abscess was formed of thinned and flattened cord tissue. There was no lesion of the bone and the dura was freely movable over the surface of the vertebrae. There was no visible communication between the cavity in the head of the sixth rib and the spinal canal. The edges of the opening in the cord were sutured with fine catgut and the wound closed.

Healing took place without complication and the pathological report on the pus (Dr. G. T. Western) showed the presence of tubercle bacilli on August 13th. The patient was sent to a convalescent home, being able to walk with assistance, but all movements being still very spastic. On return from convalescent home on Oct. 10th he was walking perfectly and able to run. There was complete control of the sphincters, but all reflexes were greatly increased.

On Jan. 16th, 1918, he was normal in every respect, but the knee-jerks were, perhaps, a little more brisk than normal. All movements of the legs, walking, and running were quite unaffected.

Secondary Carcinoma of Vertebrae.

The next case is one of secondary cuboidal-celled carcinoma of the vertebrae.

CASE 2.—Patient, aged 58, first noticed the onset of severe pain in her back in February, 1917, following an attack of tonsillitis. It was treated as lumbago. This improved with rest, but in the early part of July she noticed severe pain of a somewhat different nature. It was under the shoulder blades and passed right round the thorax and abdomen, feeling like a band about two inches wide. In the middle of July she noticed "pins and needles" in both feet, but chiefly in the left, and at the same time the left leg became weak, to be followed shortly afterwards by weakness of the right leg. This weakness had been increasing steadily and she had been losing all feeling in the body below the waist. Two weeks ago she first had difficulty in passing urine and a tube of admission to hospital on August 8th, 1917, had to have a catheter passed twice a day.

The legs lay extended flat in the bed and there was no voluntary power of any movement in them, but when they were touched there were involuntary movements of contraction of the hip flexors and hamstrings, the legs being usually drawn up. The reflexes were all increased, the plantars were up, ankle clonus present and the knee-jerks greatly increased. The abdominals were all absent. There was complete loss to all forms of sensation, including vibration, up to the level of the ninth dorsal segment. Above this area of loss was a well-defined band of hyperæsthesia about two inches wide (Fig. 1). There were

retention of feces and constipation. The X ray of the spine showed no abnormality and no primary growth could be found in the breasts, thyroid, or abdomen.

Operation, August 11th, 1917. A flap incision was made, exposing the spines of D 4-12, and these spines removed. The laminae of D 7, 8, and 9 were excised and a mass of soft gelatinous growth seen spreading from the bodies of the vertebrae around the dura. The upper and lower borders of the growth were not delimited, but a portion was removed for microscopic examination and the wound closed. The pathological report showed a secondary small spheroidal-celled carcinoma. Progress was steadily downhill, death occurring in the middle of September.

Ossifying Chondroma.

In this case the lesion was ossifying chondroma of the body of the vertebra.

CASE 3.—A man, aged 44, was admitted to hospital on Feb. 29th, 1918. Four months before he had noticed the onset of pain in the back and passing round the left side of the chest. Two weeks later numbness started in the right foot and soon passed up the whole leg. Two months before admission the left leg commenced to be weak in walking, and two weeks ago numbness began in the left foot and had continued since, but had not spread up the leg. There had been no trouble with micturition.

On admission he was found to walk with great difficulty, keeping his eyes upon the ground. The right leg was ataxic and the left was both ataxic and spastic. When the eyes were closed he was unable to keep upright. All the movements of the left leg were performed very slowly on account of the rigidity, but he could flex and extend his toes, and the individual movements, although very spastic, were strong. All the movements of the right leg were strongly and quickly performed and were not incoördinate when the eyes were open, but when he closed his eyes they were extremely ataxic.

He complained of numbness in the right leg up to the hip and some numbness in the left foot. There was no loss anywhere to cotton-wool, but complete loss to prick, heat, and cold over the right leg up to the

CASE 4.—Patient, aged 36, was quite well until September, 1916, when he had an attack of influenza. This was associated with pain in the back and the left side of the abdomen at the level of the umbilicus. After the attack he started work for a few days, but noticed that on crossing the road he always kicked the curb with his left foot and was unable to lift his toes up. At the same time he commenced to experience difficulty with micturition, chiefly in starting the flow. There was no retention and no incontinence. In December, 1916, he had a second attack of influenza, after which his left leg was weaker, so that he had to swing it on walking, but he could still manage to walk about four miles. The trouble with the urine increased, and in March, 1917, he noticed that the right leg felt numb below the knee. He was admitted to hospital on May 6th.

It was found that in his left leg the quadriceps and hamstrings were much weaker than on the right side and the anterior tibial group of muscles could not be contracted at all. There was no weakness in the arms or right leg. On the right side the knee-jerk was greater than on the left, and on this side ankle clonus was just obtained. On scratching the left sole the toe went up and there was a contraction of the left quadriceps and hamstrings. On the right side the toes were up, but the reflex was limited to the foot. The abdominal reflexes were not obtained.

On the sensory side there was no loss anywhere to cotton-wool. Sensation to pin-prick, to heat and to cold, were completely lost over the whole of the right leg and trunk up to the level of the third dorsal segment. On the left side there was loss to the same forms of sensation on the lower leg. (Vide Fig. 3.)

Operation was performed on May 16th.

The spines of D 1-8 were exposed in the usual manner and removed. The lamina of D 5 was trephined and those of D 5, 4, 3, and 2 removed with forceps. The dura was a little distended and there was only slight pulsation. On opening the dura no lesion could be seen, but pulsation did not return. The laminae of D 1 and C 7 were therefore removed. As soon as the latter was cut pulsation returned, and at this spot the cord appeared widened. It was gently lifted with a slip of the dentate

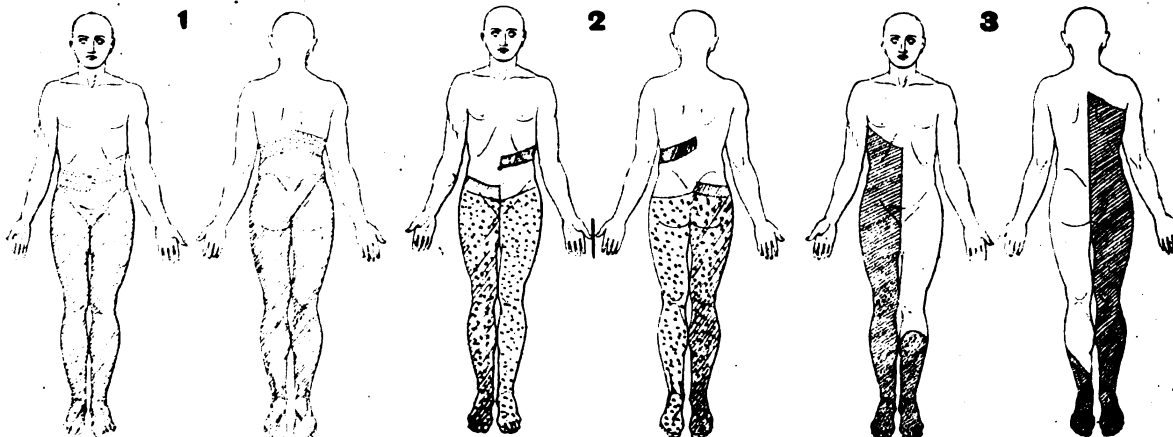


FIG. 1.—CASE 2. Shaded area, loss to pain, heat, and cold. Light touch lost, but upper level of loss 2 in. lower down. Vibration loss up to ninth dorsal segment. Dotted area, band of hyperæsthesia.

FIG. 2.—CASE 3. Dotted area, loss to vibration; shaded area, loss to prick, heat, and cold.

FIG. 3.—CASE 4. Shaded area, loss to prick, heat, and cold.

hip (vide Fig. 2). There was total loss to vibration in both legs nearly up to the level of the loss of prick. It was completely lost even in the left leg, where sensation to cotton-wool was still present. In the left lower extremity and the right toes and ankle there was complete loss to the power of recognising passive position. There was a band of definite hyperæsthesia on the left side corresponding to the eighth dorsal segment.

The reflexes in the left lower limb were increased, the ankle- and knee-jerks being greater than on the right, and on this side the plantar reflex was up. When he sat up there was a slight curve at the level of the eighth dorsal spine, evidently due to relaxation of the muscles, especially on the left side.

Operation was performed on March 25th, 1918.

A large rectangular flap was turned over to the left, exposing the spines of D 4-12 and the spines and laminae removed in the usual way. The cord was seen to be slightly displaced and a tumour was felt anterior to it at the level of the eighth dorsal vertebra. The dura could not, however, be peeled off the tumour. It was therefore opened and the cord gently pulled over to the right by means of a slip of the dentate ligament. At this level the cord was seen to be compressed by a small hard white tumour which was firmly attached to the posterior surface of the body of the vertebra rather to the left of the middle line. With a small chisel the tumour was removed from the surface of the bone after the dura around its base had been divided with a tenotomy knife. The dura was sutured over the bare area of the bone and the cord replaced. The posterior opening in the dura was now completely closed and the wound sutured without drainage.

He made favourable progress and two months later, when transferred back to the medical side, was able to walk alone. The movements of the legs were much less spastic on the left side and much less ataxic on both sides. The pathological report showed a calcified, centrally necrosed chondroma of the body of the vertebra.

Sub-pial Endothelioma.

The fourth case is one of sub-pial endothelioma of the cord.

ligament, and a translucent mass was then seen apparently projecting from the lateral columns on the left side. On carefully incising the pia over the tumour it was seen to be extramedullary and by gentle dissection could be entirely freed. It lay between the left roots of C 7 and D 1, being embraced by these roots in its upper and lower extremities. The dura was closed entirely and the wound sutured without drainage.

Two days later the power of flexion of the left toes and ankle had returned. On May 22nd the wound was healing well. He had now the power of voluntary contraction of the extensors of the left foot and toes. The plantar reflexes were both down. On the 26th the wound was healed and all movements of the legs and feet were perfect. On June 14th he was walking perfectly and only felt slight weakness in the left ankle. There was slight dulling to pin-prick in the right leg but he could feel it all over. There was no hyperæsthesia and no urinary symptoms. Allowed home.

Complete Division of the Spinal Cord.

The next case is one of gunshot wound with complete division of the spinal cord.

CASE 5.—Patient, aged 26, while passing through the German barrage on August 6th, 1916, was hit in the back by a shrapnel bullet. He fell at once with no pain, but with the feeling that the body below the middle of the chest had gone. There was no difficulty in breathing. He was carried back by stages to the C.C.S. In the first part of the journey he was semi-conscious but later had a good deal of pain in the back. From the U.C.S. he was taken to Calne where he was X-rayed. The bullet was seen in the mid-line at the level of the sixth dorsal vertebra. His bladder had to be emptied night and morning with a catheter, and whilst here his lower limbs were flaccid and powerless. On August 16th he was admitted to the Empire Hospital.

On admission there was a small clean wound of entry to the right of the spine of the second dorsal vertebra. It was nearly healed. There was a large deep bed sore over the upper part of the sacrum. All

* This case was reported in full by Captain Riddoch, from whose notes my own were in large part abstracted.

muscles of the trunk below the sixth rib and of the legs showed total flaccid paralysis but there was no wasting. There were no involuntary movements of the legs. At the level of the fourth interspace there was a narrow band of hyperaesthesia. Vibration was lost up to the level of the ninth rib and all other forms of sensation up to the level of the sixth rib.

On August 28th, for the first time, on scratching the soles of the feet, upward movement of the toes was noticed and at the same time tightening of the hamstring tendons could be felt with contraction of the anterior tibial group of muscles. The receptive field was limited to the soles of the feet. On the 31st there were periodic involuntary upgoing toe movements, with tightening of the tibialis anticus and hamstring tendons. On briskly tapping the right patellar tendon there was contraction of the quadriceps, which was, however, insufficient to move the leg. On scratching the sole there were fairly brisk upgoing toe movements, with contraction of the flexors of the knee and hip and of the adductors of the thigh. The reflexogenous area extended from the sole to rather above the middle of the calf.

On Sept. 6th the involuntary contractions were sufficient to cause slight flexion at hip and knee, dorsiflexion at the ankle, and upward movement of the toes. The receptive area for the flexion reflex had extended from the centre of the calf to the groin, and was at times associated with contraction of the ipsilateral rectus abdominis. There was periodic contraction and emptying of the bladder.

Operation was performed on Sept. 8th.

The spines of D 4, 5, and 6 were removed with forceps and the corresponding laminae then excised. Opposite the bodies of the fourth and fifth dorsal vertebrae the cord was found completely divided, the ends being separated by about an inch. The sharp-pointed bullet was embedded in the body of the sixth dorsal vertebra and was easily removed. The wound was closed in the usual way.

On Sept. 20th the wound had healed well. There were strong involuntary flexor spasms of both lower limbs recurring at frequent intervals. The limbs were both flexed at the same time, and the extension which followed the spasms was purely passive and due to gravity. There was distinct tone of the physiological flexors, but the extensors were undoubtedly flabby. On tapping the patellar ligament there was contraction of the extensors, but no movement of the knee. A stimulus applied to the sole was followed by flexion of all the joints of the ipsilateral leg. There was no return of sensation.

On Oct. 26th the flexor spasms had become very frequent, and the abdominal recti were more involved. The knee-jerks were increased and equal with good extension of the leg at the knee. The plantar reflexes were "extensor" as before, and were always associated with general flexion reflex of the lower limb. The limbs never flexed together.

On Nov. 4th the reflex spasms were more frequent, and the involuntary movement consisted of flexion at the hip, adduction of the thigh, flexion of the knee, dorsiflexion at the ankle and upgoing toes, with fanning of the four outer toes. Usually there was an accompanying contraction of the quadriceps cruris and calf muscles of the opposite leg. The ipsilateral rectus abdominis participated more often in the flexor spasm. The flexion reflexes were easily obtained. The knee jerk and ankle-jerks were brisk and equal, and definite ankle clonus was obtained on both sides.

After this date the condition persisted without much change, excepting that during and after an attack of pyelitis all the reflexes were decreased, the flexion reflex was obtained with difficulty, and the reflexogenous area was greatly decreased. As the effect of the infection passed off the reflexes were obtained more readily and the involuntary spasm increased.

Partial Division of Spinal Cord.

The last case is one of gunshot wound, with partial division of the spinal cord.

CASE 6.—Patient, aged 21, was with a working party behind the support lines on June 8th, 1918. He was picking up some sticks when he suddenly fell down with a tingling feeling in his legs, but he felt no blow or wound. On attempting to rise he found that he had lost all power in his legs. He did not lose consciousness. He was taken back to the dressing station and then to the stationary hospital. There he was found to have a wound in the upper dorsal region, with complete paralysis and loss of sensation below. He had to be catheterised. On June 12th a laminectomy was performed and a portion of the lamina of the third dorsal vertebra found depressed on the cord. It was removed. The dura was uninjured.

On June 18th he arrived at the 2nd London General Hospital with the wound healing well. There was then complete motor paralysis with flaccidity below the fourth dorsal segment and complete loss of all forms of sensation to the same level. There were no ankle-jerks, but the knee-jerks were just obtainable. When the sole was scratched there was dorsiflexion of the foot, flexion of the knee, and flexion of the hip on the abdomen.

On July 25th he lay in bed with the legs extended. There were a few slow contractions of the legs, and if the bedclothes were moved they were both flexed at the hip and knee and adducted. They could, however, be easily drawn down. The bladder had commenced to contract automatically, but there was still complete loss of voluntary power in the legs and complete loss to all forms of sensation up to the level of the nipple. If the legs were touched they were flexed at the hip and knee, but the flexion was slow and gradual, with no sharp and painful contraction. There was now a well-marked knee-jerk, with a sustained contraction of the extensors on both sides. Ankle clonus could be obtained and on dorsiflexing the foot there was a definite extensor thrust. On scratching the inner side of either sole the toes were sharply dorsiflexed, with flexion of the hip and knee and definite, but slight, extension of the opposite leg. The flexion reflex of the stimulated leg was immeasurably followed by a movement of extension at the knee. The receptive field was limited to the sole and ankle on either side, and at no time was the reflex accompanied by any contraction of the abdominal muscles.

On August 22nd there was return of voluntary movement of flexion and extension of the toes on both sides, but no movement of the ankle, knee, or hip. With it there was some return of sensation, prick being present above Poupart's ligament and on the soles, but not on the legs. Cotton-wool was absent below the umbilicus. The plantar reflex was

as before, but there was now more marked ankle clonus, and the knee-jerks were greatly increased.

Sept. 13th: The general condition was good.

The motor spasms were less, the contractions being slower and more regular. Voluntary contraction was still limited to the toes of both feet. Sensation remained as before. On scratching the soles of the feet there was dorsiflexion of the toes with flexion of the ipsilateral knee. Both quadriceps and hamstrings contracted sharply, but there was no movement at the hip. The other leg did not contract. The reflexogenous area was limited to the sole and dorsum of the foot. Ankle clonus was readily obtained and the knee-jerks were greatly increased. The upper abdominals were just obtained. There was still urgency and he was unable to hold his urine or faeces when he felt the desire.

On Jan. 27th, 1919, the general condition was very good and there was no pyrexia.

He was able to get about in a chair with the legs hanging down. He lay in bed with the legs extended. There were very few spasms and the legs could be handled without inducing them, but occasionally a marked flexor spasm was caused by a pin prick to the sole. There was then dorsiflexion of the toes, flexion of the knees and hips on both sides, but no contraction of the abdominal muscles. The tone of all muscles was good. There was voluntary contraction of the flexors and extensors of the toes and ankles. He could flex the knees and hips, but this induced some spasm so that he could not extend them again. They could, however, be easily extended by steady pressure. On scratching the inner side of the soles there was dorsiflexion of the toes, slight flexion of the knee and hip, and a powerful and visible contraction of the quadriceps and calf muscles. There was no contraction of the contra-lateral leg and no contraction of the abdominal muscles. The reflexogenous area was limited to the sole and outer side of the ankle.

Knee-jerks were much increased and ankle clonus was present on both sides. There was loss to prick, heat and cold over the left leg from the umbilicus downwards to the ankle, but it was present over the whole of the right leg and the left foot. Sensation to cotton-wool was still absent to the level of the umbilicus.

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LITERARY INTELLIGENCE.—Messrs. Cassell and Co., Ltd., announce the publication of "Elements of Surgical Diagnosis," by Sir Alfred Pearce Gould and Mr. Eric Pearce Gould. This is the fifth edition, revised, of a work which has for some time been out of print. It has now been brought up to date, and embodies the advances that have been made in the diagnosis of surgical affections in connection with war surgery. Much new matter has been added.—Messrs. Sampson Low, Marston and Co., Ltd., are publishing a work on child life by Dr. Courtenay Dunn, entitled "The Natural History of the Child."

THE TREATMENT OF GUNSHOT WOUNDS.

REPORT ON ACRIFLAVINE USED AS A PASTE
AND IN SOLUTION.

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I.—ACRIFLAVINE USED IN THE FORM OF A PASTE.

In the course of our inquiries into the value of a solution of acriflavine in the treatment of septic gunshot wounds it occurred to one of us that if it were used in the form of a paste, on the analogy of the well-tried "bipp" paste introduced by Rutherford Morison, its effect might be as satisfactory, or even more so. A paste was made up of pulv. bismuthi subnit., 50 per cent.; paraffin, about 50 per cent.; acriflavine, 0.5 per cent. Three cases having shown signs of bismuth poisoning, we adopted the carbonate instead, when we could obtain it. We are now modifying the composition, thus: bismuth carbonate, 25 per cent.; paraffin, 75 per cent.; acriflavine, 0.5 per cent.

On the introduction of any new detail in wound treatment a word of caution is necessary. The principles of surgery—viz., never to allow discharge to accumulate and to maintain free drainage in all septic conditions—stand fast as ever. At the risk of being thought somewhat behind the times, we urge that it is not so much the particular method of wound treatment or the individual antiseptic used as the laborious and conscientious attention to detail which brings success. We would insist upon the regular bacteriological counts and cultures of organisms during the treatment of wounds, just as we insist upon the routine examination of all fractures by X rays.

Method of Using Flavine Paste.

We have found very great advantage from its use in 18 cases, especially in gunshot fractures, and in suppurating polyarthritides, as in the foot. Having established free drainage and removed any parts actually necrosed, we have irrigated the wound by an automatic flushing method with eusol for 48 hours to 5 days. Then, under an anæsthetic, any remaining necrosed tissues are carefully cut or scraped from the wound and it is then very thoroughly washed out with methylated spirit, or absolute alcohol, and packed with the flavine paste. In our cases relief from pain was usually very noticeable, and as a rule it is not necessary to dress them more than once a week.

Wounds treated in this way show a marked local improvement and in a comparatively short time take on all the appearances of a healthy aseptic wound. In some cases after three or four weekly dressings under an anæsthetic with rigorous aseptic precautions, the wound and the discharge have become sterile, even in severe septic bone and joint cases, and it is then allowed to heal up or is secondarily sutured. The general condition as a rule shows rapid improvement.

Illustrative Cases.

Space allows only of a brief summary of some of the cases treated with (a) eusol and acriflavine solution and acriflavine paste in succession; (b) with eusol and acriflavine paste; and (c) with acriflavine paste only.

Eusol and Acriflavine Solution, and Acriflavine Paste in Succession.

CASE 3.—Admitted Nov. 8th, 1917. G.S.W. thigh, knee, and shin; very extensive, reaching from 8 inches above knee to upper and middle thirds of tibia. Knee-joint had been laid open and patella turned over to inner side; sinuses in popliteal space and calf. Continuous irrigation with eusol. On Dec. 18th necrosed patella was removed. Bacteriological count Dec. 20th, *Staph.* and *Streptococci* p. aur. 38 in field; 22nd, 27; 28th, scanty, Gram—bacilli 12. On Dec. 23rd acriflavine solution used as dressing, after 24 hours irrigation with normal saline. On Dec. 23rd thorough cleansing under CHCl_3 and free application to wounds, knee-joint, and sinuses of acriflavine solution on gauze. On Jan. 7th, 1918, wounds cleansed, spirit applied, and paste used. Bacteriological count Jan. 11th, 15. The paste was used as a dressing until he was transferred to England. On and after its introduction the improvement of the wound was very marked at first and then a steady continuous, especially as regards extensive anterior lesion, although sinuses continued to discharge. Sixteen bacteriological counts made between Jan 11th and March 1st gave an average of 8 per field.

This case was noteworthy on account of the severity of the lesion, the fact that the limb was ultimately saved, particularly by timely surgery and by the freedom from pain after dressing when the paste was used.

Gunshot Wounds Treated with Eusol Irrigation and Acriflavine Paste.

CASE 5.—Shrapnel wound lower extremity right ulna on Nov. 8th, 1917. Admitted Nov. 13th. No F.B. Eusol irrigation till Dec. 13th, when acriflavine paste used. Bacteriological count steadily diminished from 15 on Dec. 13th to 1 in two fields on Jan. 8th; average of 14 counts, 4 per field. With the exception of extrusion of minute sequestra, the wound, dressed with the paste at intervals, did very well, and was healed on April 14th, 1918.

CASE 6.—G.W.S. right foot. Was admitted to General Hospital on Nov. 19th, 1917. Choart's amputation performed previously to admission; wound was freely suppurating; necroses of astragalus and os calcis. Eusol was used; organisms in field remained uncountable for a month. The wound was then thoroughly scraped under an anæsthetic and treated with absolute alcohol and acriflavine paste. The organisms fell to 2 in three fields and were finally nil. Improvement was very marked; patient was discharged to England in three months with wound healed all but superficially.

CASE 8.—G.S.W. involving knee-joint. Admitted Dec. 20th, 1917. Joint laid freely open by turning down patellar flap. Was flushed with eusol until organisms in field were 2 in number; then a weekly dressing with acriflavine paste substituted until March 3rd, 1918, when signs of stomatitis appeared, due to bismuth absorption. Weekly examinations of discharge from wound showed small numbers, varying from 2 to 10, of *Staph.* and *Streptococcus aureus*. The paste was stopped on March 3rd and boric acid substituted. The wounds ultimately healed.

CASE 12.—G.S.W. leg; admitted April 9th, 1918. Wound had been excised on east side of Suez Canal, "bipped," and stitched. When admitted suppurating freely. All stitches removed; mass of "bipp" and pus evacuated. Dressed by intermittent irrigation with eusol. On April 20th packed with flavine paste. On May 2nd symptoms of bismuth poisoning supervened; paste discontinued, and eusol substituted. While flavine paste was in use the wound made rapid progress, and was "clinically sterile" on discharge of patient to England.

CASE 13.—Patient was blown up when ship was torpedoed, and piece of metal driven into thigh. On admission wound was septic; it was repeatedly opened up; sinuses drained and counter openings made. Hip-joint became involved; head of bone was excised. Organisms 6 in field. Acriflavine paste was used; in 8 days bacteriologist reported sterile.

CASE 14.—G.S.W. and fracture of bones of foot. Admitted April 9th, 1918. Soft tissues around wound had been freely excised at C.O.S. and "bipped" on April 1st, 1918. Wounds were opened up, enlarged, "bipp" was removed, and *Staphylococcus aureus* found in pus. The foot improved steadily but slowly. On May 5th wound was cleaned, and acriflavine paste applied. From "organisms uncountable" to "wound clinically sterile" occupied 26 days. Patient discharged to England on June 20th, with merely surface dressing. All sinuses closing rapidly and no bare bone felt; good prospects of patient having a useful foot.

CASE 16.—Extensive G.S.W. thigh and leg, Nov. 7th, 1917. Admitted Nov. 10th; also suffered from malaria. Treated with eusol irrigation. F.B. removed and better drainage provided. Bacillary count 1, scanty, 3, 2, 2, 3, 3 *Staph.* p. *aureus* pure. On Jan. 29th tibia scraped and wound packed with acriflavine paste. Average count 2 per field in 15 counts. Acriflavine paste dressing continued. Healed by May 15th, 1918.

CASE 18.—G.S.W. right thigh on Nov. 25th, 1917. Admitted Dec. 3rd. Large discharging wound at inner aspect of lower third of thigh and comminution of femur. Discharge continued. On Feb. 13th, 1918, bacterial count was 27 *Staph.* p. *aureus* (pure) per field. On Feb. 14th amputation was discussed; but packing with acriflavine paste was done, after removal of necrosed bone. Subsequent counts, Feb. 22nd 2; March 8th, 5; 13th, 4; 27th, 3 per field. Pain had been a distressing feature in dressing, but none was felt after use of paste. The wound continued to do well, and it was evident that loss of limb had been averted. He was invalided to England almost healed.

Value of the Treatment.

Although the cases treated are only 18 in number and too few on which to dogmatise, yet we feel that the use of a paste of acriflavine is worthy of more extended trial. In itself we do not think that 0.5 per cent. of acriflavine had any toxic effect; and any symptoms of poisoning observed were undoubtedly produced by bismuth subnitrate—perhaps impure. Similar calamities were observed when, following the initiative of Beck, of Chicago, the bismuth treatment of tuberculous sinuses was practised, and doubtless poisoning occurs from time to time when the bismuth and iodoform paste is used.

Various surmises have been made as to the method by which pastes act. It is quite clear that a rigid technique must be adhered to and the wound thoroughly cleansed and rendered practically sterile clinically before they are employed. If these precautions are not taken the paste acts as a foreign body and has to be removed, as in two of our cases which were "bipped" at another hospital.

It is difficult without more experience to assert that acriflavine paste is superior to "bipp," but that it is efficient when properly employed we have reason to hope. And we would insist again upon this fact that the element of success is thorough cleansing of the wound, washing every nook and cranny with absolute alcohol, and then applying the paste. The facts that painful dressings are not required, that dressings need only be done occasionally, and that there is little or no pain after pasting as compared with packing sinuses with gauze soaked in other antiseptics are very significant. We have observed that under the

paste the granulations were small, equal, velvety, and formed rapidly under a covering of it. The skin edges were healthy and grew in rapidly. Also, that while gauze soaked in eusol adheres to the growing edge of the skin and damages it when removed and causes it to become thickened, the paste acts as a protective to the epithelium and renders dressing easy and painless. It may therefore be of use as a superficial protective dressing.

II.—THE USE OF ACRIFLAVINE SOLUTION IN DRESSING.

In carrying out these observations on acriflavine we endeavoured to do so systematically, and by the kindness of Colonel O'Sullivan, C.M.G., O.C., — General Hospital, a ward containing 12 beds was placed at our disposal about 14 days after the capture of Gaza in the autumn of 1917, although on two occasions the exigencies of the service caused this scheme of observation to be interrupted for a short time.

Our first endeavour was to establish controls, and for this purpose three cases similar in nature and severity to the others were treated by one antiseptic—viz., eusol. After each dressing smears were taken and the number of organisms in the microscopic field counted. We used as definition "uncountable" when they were very abundant; in other instances we give the actual numbers in the field, and we speak of cases as being "clinically sterile" when there were not more than two or three in a field. When the discharge had arrived at the last-mentioned stage we deemed it time, if the wound was extensive or gaping, to lessen its size or close it by secondary suture.

Illustrative Cases.

The following are short accounts of some of the cases:—

Control Case Treated with Eusol Throughout.

CASE 1.—G.S.W. thigh on Nov. 5th, 1917. Admitted to General Hospital on Nov. 9th. Two small pieces of metal defined in tissues by X rays. Continued to discharge; on Jan. 4th, 1918, streptococci 5 per field. On Jan. 5th two sinuses opened up on back of thigh, foreign bodies removed, and drainage tubes inserted. The tissues lining the sinuses looked septic and were unhealthy. On Jan. 8th streptococci 3 per field; Jan. 10th streptococci and *Staphylococcus p. aureus* 2 per field; Jan. 12th and 15th 3 and 1 per field of staphylococci and streptococci respectively. Jan. 17th: *Staphylococcus p. aureus* pure, 3 per field. Jan. 21st, no pus; 25th wound sterile; Feb. 6th, wound healed completely. Applications throughout were eusol applied on plain sterile gauze.

Case Treated with Eusol for a Few Days and then with Acriflavine Solution 1 in 1000.

CASE 1.—G.S.W. left foot on Nov. 6th, 1917. Admitted to General Hospital on Nov. 13th. Dressed with eusol until Nov. 27th; then eusol discontinued, and irrigation with sterile normal saline solution for two days. On Nov. 15th streptococci and *Staphylococcus p. aureus*, 23 in field after the case had been dressed with eusol. After two days of acriflavine treatment 37 in field, and in three days 13. The following records are: Dec. 2nd, 3; 3rd, 3; 4th, 4 (streptococci only); 5th, 2 (streptococci and staphylococci); and so on day by day until, on Dec. 16th, the wound was completely sterile, and shortly after it was soundly healed. Surgical measures, such as removal of necrosed bone and ample drainage, were accomplished on Dec. 5th.

In two cases of diphtheroid infection of wounds treatment with acriflavine solution was ineffective.

CASE 4.—Whitlow of thumb, secondary abscess middle and upper arm. Admitted Dec. 19th, 1917, with sloughing discharging whitlow of thumb, and a very dirty ulcer over biceps 3 inches diameter. Its floor was composed of disintegrating sloughing necrotic tissue, in some parts very dark, edges and walls much undermined, and surrounding tissues showed inflammatory reaction. Diphtheroid super-infection suspected on Dec. 21st. On this date streptococci 39 in field; 23rd, 34; 26th, 34; 28th, 14. Jan. 1st, 1918: streptococci, staphylococci, and Gram-bacilli uncountable. Treatment: incision, curetting, constant irrigation with eusol, and injection of hydrogen peroxide around lesions. Extension of ulcer on arm less rapid on Dec. 28th, but was intermittent for more than a fortnight. On Jan. 6th was given 6000 units antidi-phtheritic serum, and 4000 units on the 9th. Extension of arm ulcer resumed on Jan. 13th. Acriflavine injections 1 in 2000 just beneath extending edge, and surface dressed with 1 in 1000 solution and injection repeated on Jan. 15th. Bacteriological count before acriflavine used 15 per field. Afterward on Jan. 15th 16; 17th, 20; 19th, 32; 23rd, 21. On Jan. 19th the following were present: streptococci, Gram-, Gram+ staphylococci, and diphtheroids. On Jan. 22nd was given 6070 units antidi-phtheritic serum. On three occasions between Jan. 25th and Feb. 2nd the wound was well scrubbed with antidi-phtheritic serum. On Feb. 2nd a swab was reported as negative, and again on Feb. 6th, when the lesions had a healthy appearance.

Results of the Treatment.

We are unable to affirm that gauze soaked in acriflavine solution when applied as a dressing to wounds presents any outstanding advantages, and it does not exhibit any marked superiority to eusol. In fact, so far as the effects of acriflavine solution on granulations are concerned, these often become sluggish and indolent. Every effort was made to keep our technique sound throughout in spite of numerous difficulties, and we were generally successful. Acriflavine entails the use of rubber

gloves, for the solution was found to provoke an acute eczematous condition when it came in contact with the unprotected skin of the hands. Preparations of flavine have another drawback, they have such an intense staining power.

Those things which seemed to us to have far more influence than any antiseptic on the progress of the wounds were evacuation of foreign bodies and of sequestrums, thorough mechanical cleansing, free drainage, and the most scrupulous care in the technique of wound dressing. And so far as concerns the information afforded by the above observations, scanty though it is by reason of the small number of the cases, yet involving laborious bacteriological investigations and counts, we fail to see that acriflavine solution is superior to all others yet introduced in combating bacterial growth in wounds or in promoting rapid healing. It was certainly powerless in the presence of diphtheroid bacilli, and not eminently satisfactory in that of *Strepto-* and *Staphylococcus p. aureus*. It is far less useful than the paste.

A TREATMENT FOR TRENCH FEVER.

BY MAJOR J. E. SWEET, M.D., U.S.M.C.,

CONSULTANT IN RESEARCH, AMERICAN E.F.;

AND

LIEUTENANT H. B. WILMER, M.D., U.S.M.C.

(From a British General Hospital in France.)

THE following paper is presented with a full knowledge of the fact that the method of approach is not purely scientific and is open to criticism from many an angle. The difficulties of diagnosis, the uncertainty of establishing a cure, the specific effect of any treatment,—all depend on the demonstration of the causative agent. Furthermore, the scientific attack upon disease is prophylaxis, and the way to prevent trench fever is, in theory, perfectly simple—to get rid of lice. This will probably be most thoroughly accomplished when the preventive treatment of war wounds has been put into force.

The following results are also presented with a full knowledge of the fact that there is absolutely no treatment for the disease; even the mainstay of the practitioner, symptomatic treatment, yields most unsatisfactory results. References to wastage of man power are not necessary.

Treatment by Intravenous Injection of Collargol.

In the Medical Supplement (compiled by the Medical Research Committee) of the "Daily Review of the Foreign Press," issued by the General Staff, War Office, dated Feb. 1st, 1918, p. 28, is found the following:—

"According to Richter¹ intravenous injection of collargol (10 c.cm. of 1 per cent. solution is a specific remedy comparable to quinine in malaria. Three injections at two- or three-day intervals cure acute cases."

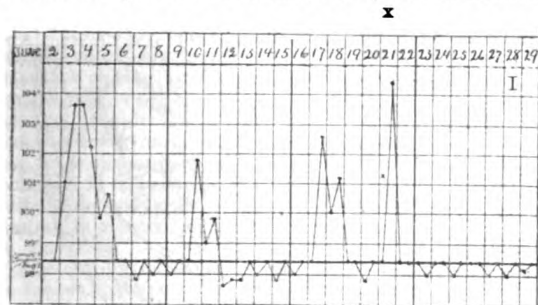
Even though we were fully aware of the history of this drug and of the fact that it, with other colloidal preparations, has not done all that enthusiasts have claimed, and even though we were aware that certain other silver preparations have been tried in trench fever to no avail, it seemed to us that a trial of collargol was worth while for two reasons—the drug differs considerably from other colloid silvers and there is no great evidence of particular worry about trench fever in the enemy literature.

We present our results even though the number of cases is relatively small—the total is 35 cases—because of the uniformity of the results obtained; 100 per cent. of 35 cases is somewhat better than 35 per cent. of 100 cases. The number is certainly too small to substantiate Richter's claim for specificity; such a claim cannot be decided until after general trial, and it is with the hope that this treatment may be tried out by other workers, and with the assurance that it at least gives us something to do, that we offer the results for what time may show them to be worth. There has been no question in the minds of the clinicians who have followed these cases that the collargol was immediately followed by marked improvement and recovery; it has only been difficult to decide in some cases whether the collargol was merely an incident in the course of the spontaneous recovery from the disease. Some cases do so recover, though

¹ Richter, E.: *Therapie d. Gegenwart*, 1917, N.F. 19, 89-96.

of the cases reaching the base by no means the 90 per cent. reported by the British Trench Fever Committee. We have learned of no method of distinguishing between a case which will spontaneously recover, and one which will spend the next six months in hospital.

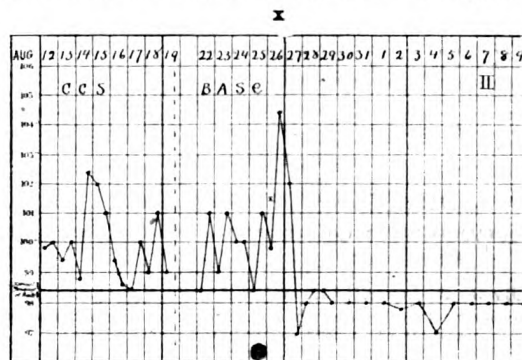
It will be noted that a pronounced reaction follows the intravenous injection of 10 c.cm. of a 1 per cent. solution of



collargol, made in sterile distilled water, and it is of interest that the patients often compare this reaction to their initial attack. We are not disposed to consider this reaction as a harmful effect. The only untoward symptom will develop if the injection does not enter the vein but passes into the cellular tissue. If this occurs a decided inflammatory reaction may follow, even leading to abscess formation.

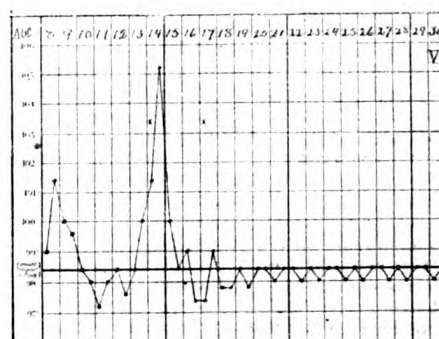
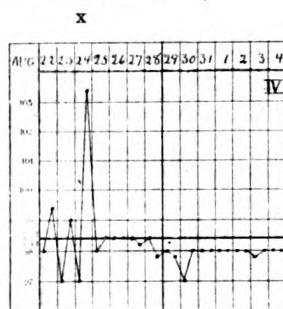
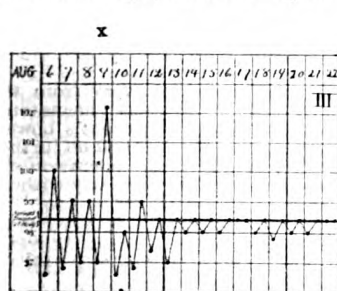
We are under lasting obligation to the American Red Cross for a small supply of the collargol of recent manufacture.

Nos. 6 and 7 is to be explained by coincidence, then the effect of the second injection, when the fever and pain had returned after a six-day interval, makes the theory of coincidence appear like an excellent treatment. Nos. 6 and 7 were followed for three weeks after the second injection—



a week more than is charted—with no return of symptoms of any kind.

No. 1.—Captain A., U.S.M.C. Attack began Feb. 6th 1918; course marked by fever, recurring every seventh day, preceded by chills and accompanied by backache, headache, and shin pain. Lost about 20 lb. in weight. June 21st, 10 c.cm. collargol. Has had no return of symptoms since, and has regained the lost weight. Has been under observation for 15 weeks since the collargol.

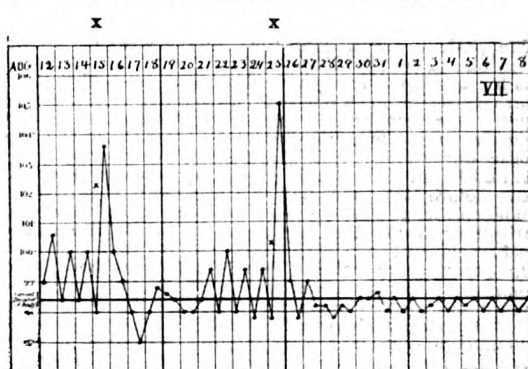
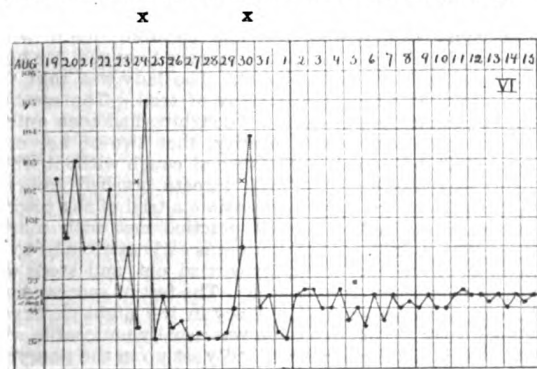


Illustrative Cases.

We have chosen the accompanying 7 of our 35 charts to illustrate certain points. The time of the injection of the collargol is indicated by an X. It will be noted that we have not always carried out the injection at two- or three-day intervals. In some we have done this, and the reaction seems generally to be much less marked when the second injection follows the first after a short interval (No. 5). We

No. 2.—Private S. Entered hospital bringing chart for August 12th to 19th. August 26th, collargol. Temperature fell to subnormal the next day, rose to normal August 28th, and remained normal until discharge, Sept. 11th.

No. 3.—Private H. Admitted August 5th, 1918. Patient says he has had chills and sweats, pain in head, back, and shins, for five weeks, and had the same sort of attack 14 months ago. Collargol August 9th. Observed until 22nd with no return of fever or typical pain. Dis-



purposely did not carry out the two- or three-day injections in many cases, for it seemed a way to control the question of whether we were dealing in coincidence. Nos. 1 and 2 are somewhat difficult to explain on the theory of coincidence; Nos. 3 and 4 may possibly be so explained, as well as, perhaps, No. 5. But if the effect of the first injection in

charged complaining of weakness and stiffness and pain in knee and wrist-joints.

No. 4.—Private H. Admitted to C.C.S. August 13th, 1918, complaining of headache, backache, pain in shins, and chills and fever. Admitted to hospital on 22nd. 24th collargol. 28th out of bed, no discomfort. Observed to Sept. 4th; no complaints except feeling weak.

No. 5.—Private S. Attack began August 4th. Fever, chills, pain in head, back, and shins, perspired easily. Fever evidently of the six-day

intermittent type. Collargol August 14th, following fever spike. Second injection on 17th with no reaction. Observed to 31st; no return of fever or pain.

No. 6.—Private B. Admitted C.C.S. August 19th, 1918, to hospital on 22nd. Collargol on 24th. Return of fever and pain six days later; second injection collargol. Discharged Sept. 24th.

No. 7.—Bugler J. Admitted August 12th, 1918, with usual symptoms and extreme tenderness of shins. Said he had similar attack in July, 1916, was three months in hospital and convalescent camp. In July, 1917 second attack, spent 31 weeks in hospital, convalescent and training camps. Says present attack is more severe than either previous attacks. On August 15th collargol. Six days later fever and pain recur; second collargol on 25th. 28th out of bed, no aches or pains. Discharged Sept. 17th, with no aches or pains and gaining weight.

ADHESIONS OF THE SIGMOID

ASSOCIATED WITH CONGENITAL ABNORMALITY OF THE MESENTERY CAUSING CONSTIPATION.

By J. P. LOCKHART-MUMMERY, F.R.C.S. ENG.,

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AND

DRURY PENNINGTON, M.B., B.C. CANTAB.

In a paper read before the Royal Society of Medicine¹ one of us (J. P. L.-M.) described a number of cases somewhat similar to the following. Cases have also been described by numerous other surgeons, and particularly by the late Dr. Tuttle, of New York, who recorded an almost identical case. We feel convinced that many cases of severe constipation or auto-intoxication are due to abnormalities of the sigmoid associated with membranous adhesions of congenital origin. These membranous adhesions are found in different parts of the colon but most frequently in the sigmoid and caecal angles. A similar condition of the ascending colon is sometimes described as Jackson's membrane. These adhesions are quite common and must not always be regarded as pathological, for it is only in a few cases that any symptoms arise as the result of their presence. A significant fact, however, is that they are frequently present in cases of malignant disease of the rectum and pelvic colon. Whether they are a predisposing cause of malignant disease in this part of the intestine we cannot say.

Cases associated with a definite congenital abnormality of the mesentery are of particular interest in view of the fact that Professor Keith has put forward the theory, which we believe to be the correct one, that these so-called adhesions, or membranes, which are often associated with the large intestine, are congenital in origin. We do not think it is correct to attribute them to previous inflammatory conditions, since, as a rule, no history of any previous mischief in the abdomen can be discovered. They are not true fibrous adhesions, but folds or adventitious membranes forming part of the normal peritoneum, and formed at the time when the large bowel was being differentiated from the small intestine.

Notes of Case.

The patient was a domestic servant, aged 32, who consulted one of us (Dr. Drury Pennington). She complained that for the last three years she had been suffering from severe constipation associated with pain over the left iliac region. She was unable to get any action of the bowels except at quite irregular intervals, even with the use of drastic purgatives. She had lost health during the last year and found it very difficult to carry out her duties. Two years before she had had all her teeth removed. One wonders on what possible reasoning doctors can advise such mutilation; it would be as reasonable to cut off a patient's ears for sciatica!

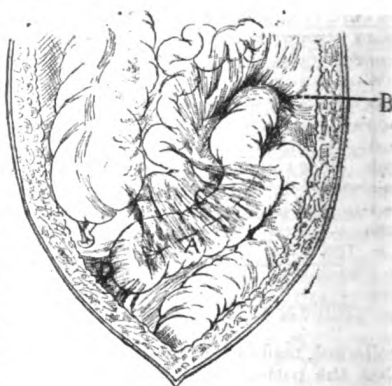
On examination nothing could be felt in the abdomen, which appeared to be normal. There was some slight tenderness in the left side. Examination per rectum revealed nothing abnormal, but an examination with the sigmoidoscope showed very definite adhesions fixing the lower part of the sigmoid towards the left iliac fossa. Vaginal examination showed tenderness in the left fornix which suggested ovarian mischief. Examination of the urine was negative. We came to the conclusion that the proper course was to open the abdomen and investigate the condition. The patient was therefore admitted to St. Mark's Hospital, where she was operated upon by Mr. Lockhart-Mummery.

On opening the abdomen a very curious condition was found. The sigmoid, which was very long, was curved on itself so as to form a long loop which passed down towards the back of the pelvis on the right side, where it was firmly fixed by dense adhesions to the posterior abdominal wall and to the extremity of the small gut. There were no adhesions to the appendix. The two sides of this loop were also firmly adherent together.

There was a curious abnormality of the mesentery, as the mesentery of the small intestine came across the descending colon so that this part of the colon appeared to emerge through a tunnel in the mesentery. The appearances are shown in the illustration.

The loop was first detached from its attachment to the pelvic wall by carefully dissecting off the adhesions, and then the two limbs were separated by dissecting away the membrane which attached them. It was now found that the loop was free to move about in the abdomen, and the sigmoid assumed more or less its normal appearance. It was not considered necessary to perform an anastomosis, but all raw areas left uncovered by peritoneum were very carefully sutured with fine thread.

The patient made an uninterrupted recovery from the operation, with the exception that she had a small hæmatoma under the skin. Since the operation the patient's bowels have acted in a normal manner, and she has had no further trouble from constipation. A year after the operation she was in good health and her bowels acted regularly without the aid of aperients.



A. Loop of sigmoid. B. Tunnel under mesentery into which descending colon disappeared. C. Membrane binding together the two limbs of the sigmoid loop and tying it to the termination of the ileum. D. Bands tying end of loop to posterior pelvic peritoneum.

A PROBLEM IN THE TREATMENT OF WHOOPING-COUGH CASES.

By N. MACLEOD, M.D. EDIN.

THE problem may be formulated in the query, Can these cases be treated satisfactorily without drugs? The results of over 40 years' experience in such cases, the writer thinks, go far to justify a reply in the affirmative.

Treatment by Brushing Throat with Resorcin Solution.

IN THE LANCET in 1886¹ Dr. W. H. Barlow reported the successful treatment of 50 cases of whooping-cough by brushing the throat with a resorcin solution. Shortly after the above date a lady with her four children, one of whom had whooping-cough, was about to leave Shanghai for home and the writer's aid was enlisted. The lady was told that the above method seemed worthy of trial. The mother's report was that the paroxysms of coughing had been quickly lessened in frequency and severity, that two of her other children had developed a paroxysmal cough without whoop and, as directed, had had their throats brushed from the time that the cough began. Meantime a trial of the resorcin throat-brushing in the writer's practice met with marked success in certain cases. Failure was early attributed to the directions not being thoroughly carried out, and steps were taken to secure proper execution. The test of success was a reduction of severity and frequency in the night paroxysms within a week. This reduction was usually noticeable when toleration of the brush was markedly set up in the pharynx.

With whooping-cough cases success became so marked that no other mode of treatment or drug was used by the writer from the late "nineties" to his retirement from general practice in 1913. No further opportunity occurred for testing a later suspicion, confirmed by perusal of notes consigned to an indexed portfolio when observations were

¹ Trans. of the Surgical Section, vol. v., p. 191.

made, but overlooked until a case with severe paroxysms seen last year in consultation recalled both notes and suspicion. The latter—viz., that the drug resorcin had probably little, if anything, to do with the success of the mode of treatment, was further strengthened recently by reference to Whittle's "Dictionary of Treatment," where resorcin and some seventy odd drugs and modes of their use are said to be employed in the treatment of whooping-cough. From this it may safely be inferred that no one of them is generally regarded as pre-eminently successful.

Without the sedative and anti-epileptic effects claimed for resorcin, how could success be accounted for? Though the following considerations presented themselves while treatment was going on, until they were arrayed together lately their force did not appear manifest. The throat-brushing procedure is accompanied by physical and physiological results independent of the drug. Are they in themselves sufficient to account for success? They are:

1. *Physical.* It was very early noted that after most applications examination of the brush disclosed more or less mucus. When it is realised that the brush is used hourly during the waking period, and also that the cough frequency and violence are in all probability not so much due to the quantity of mucus, usually not large, but to its particularly tough and sticky character, it is manifest that its removal by brush lessens the need for removal by cough.

2. *Physiological.* The frequency and violence of the cough paroxysms and laryngeal spasm indicate increased irritability of the reflex nervous mechanism concerned. There is also inadequate inhibitory control manifested by the difficulty in getting patients to restrain or repress the cough. In the course of the disease the reflex is exercised more than the inhibitory mechanism. Inhibitory power is materially reinforced by hourly obedience to the order to open the mouth widely and stick out the tongue during forced respiratory effort, and continuing all three efforts while a brush is being even only once turned round in the pharynx, and, as not infrequently happens, in the larynx itself. Pharyngeal and laryngeal tolerance of the brush demonstrates lessened irritability of the sensory and motor halves of reflex cough and spasm mechanisms in the presence of a foreign body, and contributes to better exercise of inhibitory action in such circumstances.

Psychological effects accruing from the discipline are also involved in the hourly performance, and, even on the part of the youngest patients, satisfaction and pride in successful co-operative effort.

Description of Method.

The writer is greatly mistaken indeed if those handling whooping-cough cases may not be confidently assured of attainment of the results here set forth when the procedure recommended is carried out thoroughly—viz., such amelioration within a week or ten days of starting brushing in cases where paroxysms and spasms are violent and frequent that the disease ceases to cause distress to the patient and anxiety to the parent, and, when applied early in suspicious cases, prevention of development of distressing cough and spasm.

Material.—For each case a wire-handled throat brush, bent at first suitably for pharyngeal use; when tolerance there is established it should be further bent to form almost a right angle about $1\frac{1}{2}$ inches from its point, proximal and distal parts being straight, for laryngeal brushing—quite practicable without artificial light and mirrors; a 2 per cent. solution of resorcin in glycerine and water, 1 and 12 parts respectively.

It may be noted that when tracheal injections came into vogue for tubercular lung trouble the writer soon discarded the use of artificial light and mirrors on finding that he could introduce the syringe point into the larynx and inject the menthol solution whilst the same precautions were carried out by the patient as when the brush was used. This new mode of procedure was preferred, success and failure in entering the larynx being also distinguished, by the patient.

Procedure.—Immediately before each early application of the brush it is well to put the patient through a preliminary drill in breathing deeply with the mouth wide open and the tongue well protruded, to be persisted in while the brush is introduced into and passed quickly once round the walls of the pharynx. Mucus should be washed off on withdrawal and the brush kept in a tablespoonful of the resorcin solution—renewed daily—to be ready for the next performance an hour later, the procedure being repeated regularly during the waking period. In cases shy of the brushing it is helpful at the first performance or two to be satisfied with brush introduction short of the pharynx, so that the tongue, &c., contact becomes tolerated sufficiently, and the sweet taste of

the solution experienced, repeated say three or four times on each occasion. Gradually introduced further the brush soon reaches the pharynx, where a single turn round its walls will suffice. The attempt to enter the larynx should not be made until brush toleration is set up in the pharynx. An exhibition of successful performance by another patient—younger if possible—is a good preliminary to beginning operations with new ones.

Perhaps someone already using this method of treatment, or adopting it, will be good enough to test and report whether resorcin is essential to its success.

Shanghai.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF

ACUTE ERYTHEMA RESEMBLING MEASLES.

BY F. H. KELLY, M.B., B.S. LOND.

CASES of acute erythema simulating scarlet fever have been described not infrequently, and a certain diagnosis may be wellnigh impossible. Cases in which measles is the disease simulated are less common, and diagnosis usually comparatively simple. The case to be described is of interest both on account of the intensity of the eruption, and also because in the early stages the resemblance to measles was more than usually close.

The patient was a healthy boy of 13 at a large public school. He had had four attacks of urticaria for which no cause had been found, and also measles. There was no infectious disease except influenza during the term in question. In the middle of term he was found to have a rash. He had felt perfectly well previously and did not feel ill. Temperature 100° F. The rash consisted of large discrete papules with a well defined edge about $\frac{1}{2}$ inch in diameter, confined to upper part of front of chest. One small gland in posterior of neck; occipital glands not palpable. Marked, though not intense, conjunctivitis of both eyes, about as intense as seen at commencement of measles. Thin layer of whitish fur on tongue; papillae not enlarged; slight inflammation of fauces. No Koplik spots.

Next day the rash had spread rapidly and coalesced, covering whole body, except scalp, palms of hands, or soles of feet; circumoral region completely covered. The rash, brick-red on the trunk owing to underlying pigmentation, was a vivid scarlet on the face and limbs, and was especially bright on the legs. Considerable oedema of skin generally; no hæmorrhages in skin. A large bulla had formed on the neck, discharging watery fluid. Eyelids stuck together by exudate in morning. Lips cracked and sore. The tongue was as on previous day, except for an elongated blister $\frac{1}{2}$ inch long. There was now intense inflammation of the mucous membrane of the mouth and pharynx, most marked in five or six places on inside of cheeks; on these places small vesicles, up to $\frac{1}{2}$ inch across, had formed. But for the larger vesicles the smaller might easily have been mistaken for Koplik spots. The inflammation of the throat was fairly uniform. Temperature 102° .

On the third day the intensity of the rash was still greater; oedema of skin so marked as to cause great stiffness of limbs; joints and muscles unaffected. The face was quite unrecognisable, being very similar to a severe case of dermatitis venenata. Around the neck and on the limbs numerous bullae had appeared, not at all tense, and in most discharging contents freely. A few small subcutaneous hæmorrhages on the trunk. The lips were cracked, and bled profusely on the slightest touch. The vesicles in the mouth had spread, and in some cases burst.

No marked change for some days. The bullae increased in size, one over right patella 5 in. long. Any part subject to friction or pressure became sore owing to bullae which burst, but the sacral region, where the rash was not so intense, did not become sore. The formation of bullae passed imperceptibly into desquamation, and also in places where bullae had not formed, such as anterior surface of trunk; the epidermis when it separated revealed a dry surface underneath. In places it was hard to say whether the desquamation had been preceded by bullous formation or not. Approximately desquamation may be said to have commenced at least as early as the fourteenth day, occurring while the rash was still well out, although oedema of skin had lessened a good deal. The whole surface desquamated,

including scalp, palms of hands, and soles of feet, mostly in large sheets, some several inches in diameter. The skin of the palmar surfaces of the hands and plantar surfaces of the feet separated in practically entire sheets at about end of third week. There was considerable pigmentation of the skin after desquamation was complete and the colour had faded, especially marked on lower abdomen. The skin of the limbs, and especially of the legs, remained rather a mottled purple colour. Desquamation was complete in five weeks.

The great trouble was the intense discomfort caused by the condition of the lips and interior of the mouth. The temperature, never above 102°, fell to normal on the eleventh day. Throughout the patient never appeared particularly ill. He had no vomiting or diarrhoea and at no time any cough or nasal catarrh. No special treatment was adopted except local remedies to keep the various lesions clean.

No cause was found for the eruption. The patient did not seem to have eaten anything unusual or anything which he had not eaten many times before. He could not remember if he had eaten anything which he had also eaten preceding one of his attacks of urticaria.

Hurstpierpoint, Sussex.

REPORT ON THE USE OF FORMALIN SPRAY IN CHECKING INFLUENZA

AT THE GERMAN PRISONERS OF WAR CAMP, ISLEWORTH.

BY ANGUS WYLIE, M.B., B.C. CAMB., M.R.C.S., L.R.C.P.,
CAPTAIN, R.A.M.C.; M.O. 1/C TROOPS.

IN the recent epidemic of influenza among the troops at No. 1 centre, The College, Isleworth, and among the Q.M.A.A.C. of the Hounslow, Osterley, and Isleworth area, I found that the spraying of all billets, mess rooms, and canteens by a fatigue party of eight men under the charge of a non-commissioned officer appeared to be followed by an immediate check in the spread of the epidemic.

At a later date, Nov. 4th, a severe outbreak of the epidemic occurred among the prisoners of war billeted in the rooms of a house at Isleworth, in which I had an opportunity of testing this simple method of combating the disease. The sprays, three in number, which were used twice daily from the second day of the epidemic, were Heppel's hand fly sprays with a capacity of 1½ pints of fluid in each. Each spray was charged with 6 drachms of 40 per cent. formaldehyde to 1½ pints of water, making approximately a solution and vapour of 1 per cent. formalin.

The table shows the daily strength of the prisoners, the daily number of cases of pyrexia, fresh cases, and their disposal. After the removal of the first batch of 15 cases to hospital on the second day of the epidemic no further cases were removed to hospital until the fifth day, owing to shortage of hospital accommodation. Some of these cases in the billet were severe, but all recovered.

Table of Cases.

| Date. | Day of epidemic. | Strength. | No. of cases of pyrexia. | Fresh cases. | Disposal. |
|--------|------------------|-----------|--------------------------|--------------|-------------------------------|
| Nov. 4 | First. | 56 | 3 | Nil. | Kept in billet. |
| " 5 | Second. | 56 | 15 | 12 | 15 cases removed to hospital. |
| " 6 | Third. | 41 | 20 | 20 | Kept in billet. |
| " 7 | Fourth. | 41 | 6 | Nil. | " " |
| " 8 | Fifth. | 41 | 3 | 1 | 3 cases removed to hospital. |
| " 9 | Sixth. | 38 | 1 | 1 | Kept in billet. |
| " 10 | Seventh. | 38 | 2 | 1 | " " |
| " 11 | Eighth. | 38 | 1 | Nil. | " " |
| " 12 | Ninth. | 38 | Nil. | Nil. | " " |

Of the 56 prisoners 18 had a normal temperature throughout. Two days after the spraying was commenced, on Nov. 5th, the fresh infections dropped from 20 to nil and the epidemic appeared to be suddenly deprived of its strongly infectious character, although single fresh cases occurred until the eighth day of the epidemic. These results confirmed my impression that the method had been effective in dealing with the previous outbreak at the College and among the Q.M.A.A.C., and are interesting enough to justify me in specially bringing them to notice.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

Discussion on Shock.

At a general meeting of Fellows of this society, held on Jan. 23rd, a discussion on Shock was opened by Professor W. M. BAYLISS and Dr. H. H. DALE.

Professor BAYLISS said: The condition known as "traumatic," "surgical," or "wound" shock, although well recognised, is difficult to define. It may be said to be a state of general collapse, associated with low blood pressure, and the various phenomena dependent on this low pressure, such as coldness, pallor, sweating, and so on. Perhaps the most serious consequences of the deficient circulation are those due to the deprivation of the necessary supply of oxygen. The remarks that follow refer to what is usually known as "secondary shock," since it is this that demands practical interference. The sudden "primary" shock that occurs on the receipt of an injury is analogous to fainting and is doubtless of nervous origin. It has its interest and importance and will probably receive attention in the course of the discussion. While, indeed, nervous factors are not dealt with in my short account, their possible coöperation in the production of the vascular phenomena forming the basis of secondary shock has to be kept in mind. It will suffice to mention those causes which have been found, on investigation, not to be the agents responsible for the state: arterial or venous dilatation, heart failure, acidosis, vasomotor paralysis, suprarenal exhaustion. The low blood pressure is, in practice, the most important feature of the condition, since it gives a direct indication for treatment. Indeed, one may say in general that, both experimentally and clinically, if the blood pressure is restored the other symptoms disappear, some with rapidity, others more slowly.

Causation of Deficiency of Volume of Blood in Circulation.

In the course of investigation it has gradually come to be realised that the chief, if not the only really important, factor is a deficiency in the volume of blood in circulation. This applies not only to that form of shock brought about by actual loss of blood out of the blood-vessels, but also to cases where there is no reason to suppose that there has been any great loss of blood. Apart from the fact that the general symptoms of hæmorrhage and shock are very similar, estimations by the "vital red" method of the volume of blood in circulation have shown that it is decreased in both cases. The name "*exæmia*" has been proposed by Lieutenant-Colonel Cannon for the general condition. It is clear that blood must be accumulated or held up somewhere or other in dilated regions of the vascular system. Observations made in the course of abdominal operations give no support to the view that there is any significant degree of dilatation of the arteries or veins of the splanchnic area. The region in question must therefore be that of the capillaries. Observations by Colonel Cannon had already suggested that there is stasis here in wound shock.

But what is it that brings about such a dilatation of the capillaries? At an early date in the discussion of the problem it was pointed out by Major-General Cuthbert Wallace that operations involving injury of large masses of muscular tissue were especially liable to produce shock. Experiments by Colonel Cannon and myself in the beginning of last year showed that crushing the thigh muscles of cats was followed by a progressive fall of blood pressure and other signs of shock. We found that section of the spinal cord above the origin of the limb nerves did not prevent the result, whereas clamping of the artery and vein did do so. Some chemical product of the tissue injury must then be the responsible agent. This view was confirmed more especially by Major McNee's observations on wounded men in a state of shock, where it was found that excision of the injured parts, or even preventing by a tourniquet blood passing through it from entering the general circulation, was followed by marked improvement. We thought at first that the toxic agent might be lactic acid, but experiment showed injection of this or other acid to be innocuous. In fact, "acidosis" turned out to be a negligible factor in the causation of shock. It is the result,

not the cause, of the low blood pressure. The real agent is a much more toxic one. Dale and Laidlaw have described the action of a base, *histamine*, which has the remarkable effect of powerfully dilating the capillaries, but not the arterioles, and which in larger doses produces a condition of profound shock. There is reason for believing that substances of this kind are produced in injured and disintegrating tissues. It was found further that massage of the injured muscles in the experiments on cats resulted in accelerated fall of blood pressure, so that we have an experimental justification for keeping injured parts as immobile as possible, as is done by the Thomas's splint in the case of fractured femur. These injury effects are, of course, intensified by causes tending to depress the circulation, such as cold, anxiety, fatigue, thirst, hæmorrhage, and so on.

Treatment.

The indications for treatment seem obvious. The volume of the blood in circulation must be increased. While transfusion of blood itself is the natural means, it is clear that if a satisfactory substitute, in the form of an artificial solution, could be made, it would frequently be of value. No simple saline solution, whether iso- or hyper-tonic, or containing sodium bicarbonate or calcium salt, has any permanent effect. The liquid introduced does not remain in the blood-vessels for more than half an hour or so. To ensure that it shall not leave the circulation, the addition of a colloid is necessary. The function of this is to attract water by its osmotic pressure and so to counteract the filtration produced by the blood pressure. Of those colloids admissible gum arabic is, on the whole, the most satisfactory. To correspond with the proteins of the blood plasma a 6 or 7 per cent. solution in 0.9 per cent. sodium chloride is correct. Such a solution has been found in practice to serve as well as one containing bicarbonate or excess of calcium. The use of vaso-constrictor drugs is to be deprecated. It has been found that the reserve of hæmoglobin is sufficiently great for recovery to take place even when it is reduced to a quarter of its normal value. Hence, it would seem that gum-saline should be effective in the majority of cases. A reduction of hæmoglobin to the extent mentioned implies a loss of blood of nearly 4 litres in man. It has not yet been possible to state definitely what are the clinical signs showing the necessity for blood transfusion, apart from actual determinations of the blood volume and hæmoglobin percentage. Some surgeons state that no case failing to react to gum is amenable to blood. If, however, the delay between injury and treatment has been great, no measures avail. The tissues, especially those of the nerve centres, as shown by Colonel F. W. Mott, become so far damaged by the low blood pressure and want of oxygen that recovery is impossible.

In actual practice the following general procedure may be recommended:—If the patient is cold and fatigued by a long journey, try first the ordinary measures of resuscitation, such as warmth, water to drink, and rest. If little or no improvement in half an hour or so, 750 c.cm. of warmed gum-saline slowly into a vein. This may probably be insufficient in amount. Therefore, if some benefit in half an hour, more gum-saline. If no result at all from the first injection, transfusion of blood if available. But the evidence on the whole suggests that if gum-saline is ineffective blood will be also useless, except in the rare cases where the loss of blood has been more than 75 per cent. of the total volume.

Investigation by the Shock Committee (Medical Research Committee).

Dr. DALE traced the historical connexion of the point of view arrived at by the Shock Committee (Medical Research Committee) with work done before the war. The reflex inhibition of heart and vascular tone, demonstrated in the classical experiment of Goltz, probably accounted for the condition of immediate collapse which surgeons in the war had called "primary shock." The more slowly developed "secondary shock" had formed the subject of the Committee's investigations. When these began, Crile's conception of this condition as due to exhaustion of the vasomotor centre, leading to arterial dilatation and collection of blood in the great veins, was widely held. Communications from surgeons in France, however, showed that the condition of shock as seen in the clearing stations corresponded rather with a conception which had grown out of the work of Malcolm, Henderson, Mann, and others,

according to which the essential feature was a deficient volume of blood in effective currency—an "oligæmia." This loss of volume was due partly to loss of plasma from the vessels, as Sherrington and Copeman first pointed out, but the defect of return to the heart was not wholly explained by such loss. Lack of tone in the arteries would not account for such a condition, and according to the clinical evidence the arteries were contracted rather than dilated and there was no sign of accumulation of blood in the great veins.

The Committee had failed to identify any nervous mechanism by which such a complex could be produced, though their failure did not prove that nervous factors could be excluded. They had considered and rejected the claims put forward for "acidosis" as a cause. A clue to a factor of probable importance was given by work carried out by Dr. Laidlaw, Professor Richards, and the speaker on the action of the base "histamine," the effect of which could be taken as a type of the effects of a large class of protein cleavage-products, formed by autolysis, bacterial action, &c. Histamine and substances having this type of action, when injected into anaesthetised animals, produced the anomalous association of arterial constriction, with fall of arterial blood pressure and concentration of the blood by loss of plasma. The output of the heart failed because the return of blood to it was inadequate. Analysis of the action of histamine had led to the conclusion that it caused general dilatation of the capillary blood-vessels, and later a morbid permeability of the endothelium; the blood tended to accumulate at the periphery, to become concentrated by loss of its plasma, and to stagnate in the capillaries, so that the heart and larger vessels became depleted and a large part of the blood ceased to circulate effectively. The condition thus described obviously represented a rapid generalisation throughout the system of a process which, if occurring locally, would be recognised as inflammation. The analogy between the condition of the blood-vessels in shock and that seen in inflammation was pointed out by Malcolm in 1893.

The Toxæmic Factor in Shock.

The next step was to show that shock could be produced by absorption from injured tissues of substances having this type of action. This had been demonstrated by the experiments of Professor Bayliss and Colonel Cannon, who had shown that massive trauma of the muscles of a limb caused shock, even when the nervous connexion with the rest of the body had been interrupted, but that occlusion of the vessels to the injured part prevented its occurrence. These experiments, with their therapeutic implications, had been fully dealt with by Professor Bayliss. Major-General Outthbert Wallace had early pointed out the association between shock and extensive injury of the muscles. This had been further accentuated by the clinical observations of Colonel Cannon, Major McNee, and others. The French surgeons, Quéau and Delbet, had independently reached similar conclusions as to the importance of a toxæmic element in shock. It should be pointed out that, though injury to muscles had figured prominently in war wounds, toxic substances having this type of action were especially abundant in the stomach and small intestine, and their presence might be significant in connexion with the familiar association of shock with injury to, or rough handling of, those viscera.

The Committee were not putting forward this conception of "traumatic toxæmia" as a complete explanation of all kinds of shock. They believed it had been an important factor in shock as seen during the war. The definition of shock was by symptoms, not by causation. Probably in many cases unrecognised hæmorrhage and infection played a great part. In others, causes as yet unknown might be at work. The Committee believed that they had identified a factor of which the importance had not yet received adequate appreciation. The important points for discussion were, how far the conclusions drawn from the study of shock as seen in the war were applicable to the conditions of civilian practice, and how far the therapeutic measures which had proved of value in war were likely to be of similar value in peace.

Discussion.

Lieutenant-Colonel F. W. MOTT, F.R.S., said the investigation of the brain in various conditions of shock was difficult, and the results of his observations and experiments regarding the bio-physical and bio-chemical changes seen

required confirming by further investigation. He showed, by means of the epidiascope, slides illustrating the vascular changes in (1) shell shock; (2) shell shock with burial and probably gas poisoning; (3) extensive burn shock; (4) wound shock; and (5) shell shock with cardiac contusion. All the cases of shell shock had a great fall of blood pressure before a fatal termination. The burn shock and wound shock cases died painless in spite of the injection of gum solution. Shell shock brains were characterised by hæmorrhages into the sheaths of the vessels and minute scattered hæmorrhages; they were due to a rupture of very small vessels and the escape of blood into the peri-adventitial sheaths or into the brain substance. In wound shock, shell shock, and burn shock there was evidence of engorged veins in the meninges, and in the substance of the brain there was venous and capillary stasis, with associated marked anæmia.

Mr. J. D. MALCOLM referred to his work on the subject in 1893 and 1905. He considered that the conception of shock as arising primarily from a reflex vascular contraction, extending from the periphery to the centre, fully explained every change known to take place in the condition. When the vessels became generally contracted the cubic capacity of the vascular system must necessarily be reduced, and so the quantity of blood in the vessels must be diminished. One of the constant features of severe shock was profuse sweating; much fluid escaped from the vessels and from the body generally. He agreed as to the great importance, in the face of severe hæmorrhage, of giving ample fluid to compensate for the loss, most usefully when the state of shock was developing.

Results of Clinical Experiences.

Captain KENNETH WALKER'S remarks were based on his experience of primary shock, that supervening before the man's arrival at the casualty clearing station, but he devoted special attention to the points which might have a useful bearing on civil practice in the future. The careful and exact work during the war on blood volumes carried out by Robertson and Keith at the base was most valuable in this connexion; they showed that the volume of blood after hæmorrhage sometimes fell to 50 per cent. or 60 per cent. of its original figure; hence the importance of maintaining the body's fluid reserves. The speaker had found that critical cases made a dramatic recovery from their shock when transfused with bicarbonate after blood. He did not think either blood or bicarbonate alone could have produced the same effect. After the use of these fluids the general results showed a steady improvement. In judging as to the value of gum injections, the amount of transport, the degree of cold, and other difficulties the men had to suffer must be taken into account. He did not favour the use of the tourniquet for the purpose of trying to prevent the toxins from macerated muscle entering the general circulation, as it caused the man so much pain that it introduced the element of nerve shock to complicate the case.

Colonel C. J. BOND (Leicester) spoke of the varying quality of blood sera in different people, with the resultant uncertainty as to the degree of its action on the red cells and the leucocytes. He also criticised, on the basis of records of experiments on animals, the placing of patients with shock in the full supine position, owing to its action in impeding the heart. This was confirmed by the fact that patients distressed with heart disease naturally assumed the posture of leaning forward. With regard to the injection of gum in cases of shock, that had not maintained its reputation among the officers with the Macedonian Army, but the difficulties of transport there were certainly very real.

Dr. O. H. S. FRANKAU quoted figures to show the unfavourable effect of cold on these cases, the wounded cases on which the observation was made numbering 14,000.

Major-General OUTHBERT WALLACE summarised his clinical experiences of the cases he had seen during the war. Sir ARBUTHNOT LANE referred to the importance in shock of acute intestinal auto-intoxication, and the debate was continued by Mr. P. LOCKHART-MUMMERY and Captain H. O. BAZETT, who referred to effects of various anæsthetics and to the necessity for a more general use of oxygen in cases of shock.

Reply to Points raised in the Discussion.

Professor BAYLISS in his closing remarks said: It seems to me that something more than arterial constriction, as suggested by Mr. Malcolm, is required to explain the

phenomena of secondary shock. It is difficult to realise how the loss of fluid, caused presumably by the high blood pressure, is sufficient to account for the large decrease in effective blood volume, especially in view of the fact referred to by Major-General Outhbert Wallace that the tissues are not particularly moist. Evidence has also been presented that the arterioles are still constricted even when the blood pressure has fallen very low.

As regards the absence of marked cyanosis in shock, we must remember that a very small dilatation of the capillaries, if widely distributed, may soak up a large volume of blood, and there is always the possibility that the pale cases may have lost blood by external hæmorrhage. I understand from Major-General Outhbert Wallace that the majority of cases of wound shock seen by him had lost blood and were pale. The blue cases were exceptional, but may have lost blood. Two particular cases, which were blue, had not lost blood.

Captain Walker's experience with a combination of blood and saline is important. It seems to show that the essential thing is to keep up a good volume of fluid in the circulation. I am somewhat surprised that he did not find gum to serve this purpose. The advantage of intravenous injection of gum over forced fluid by the alimentary canal is the rapidity of its effect—sometimes a matter of importance. When the state of shock is due to capillary stasis it has always seemed to me that the advantage of gum over saline is that it keeps up a good circulation until the capillary blood has been restored to the main body of the circulating fluid. Saline leaves the vessels too quickly to ensure this; otherwise there is no obvious reason why it should not serve the purpose when no blood has been lost by hæmorrhage. With reference to the bad effects of deficient oxygen-supply in anæsthesia, the question as to why they are so lasting is an interesting one. It was also the case in the experimental shock investigated by Cannon and myself.

There seems to be no doubt that the cases in Macedonia, referred to by Colonel Bond, were not treated sufficiently early. They were all desperate cases. The transfusion of blood was not performed. It has frequently happened that the first dose of gum is insufficient in amount and that a repetition effects the desired object. It is remarkable how large a quantity can be given without harm. It is also to be kept in mind that some samples of gum are ineffective, for some unknown reason. I have not found this to be the case with that sold as "Turkey elect," which was used for the supply in France. The cross-circulation experiment suggested by Mr. Lockhart-Mummery would be valuable. But the fact that shock is produced by muscle injury in cats when the nervous supply of the limb is cut off shows that there is something in addition to nervous reflexes.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Discussion on Reconstruction in the Teaching of Obstetrics and Gynæcology to Medical Students.

A MEETING of this section was held on Feb. 6th, Mr. J. D. MALCOLM, the President, being in the chair.

Dr. W. S. A. GRIFFITH opened a discussion on Reconstruction in the Teaching of Obstetrics and Gynæcology to Medical Students. He gave a general survey of the subjects to be taught and of the methods of teaching them, accentuating the importance of a thorough training in obstetrics for students of medicine. Gynæcology, he said, was so intimately bound up with obstetrics that any attempt to teach them as separate subjects was futile, though there was much in each subject to be taught independently. He discussed the subject under the following heads: (I.) subjects necessary to be taught; (II.) methods of teaching.

(I.) Subjects to be Taught.

The *obstetric anatomy of the pelvis* must be taught by the obstetrician; the *anatomy of the pelvic organs*, not necessarily in minute detail, but with the greatest accuracy.

The *physiology of the generative organs*, including menstruation, puberty, and the climacteric, must be taught by the obstetrician whose experience would enable him to give the student a view of its far-reaching importance in health and disease, mental and physical.

Pregnancy.—(1) The general structural changes in all parts of the body affected by pregnancy as well as the

special organs and their functions, by which the symptoms and physical signs are recognisable in diagnosis. (2) The general development of the ovum into the mature foetus, placenta, and other parts. (Minute details of development are unnecessary in this course.) (3) Morning sickness. (4) Duration of pregnancy and the prediction of the probable day of confinement. (5) The various positions of the foetus and the means for recognising them.

Labour.—(1) The general process and phenomena. (2) The doctors' and nurses' duties in preparation for and during labour. (3) Anæsthetics and substitutes. (4) Drugs—ergot and pituitrin.

The Puerperium.—The process in general, and phenomena. Lactation; breast-feeding; care of the breasts; doctors' and nurses' duties; doctors' and nurses' fees.

Pathology.—(1) The pathology of pregnancy, intra- and extra-uterine, with the diagnosis and treatment. (2) The pathology of labour; the treatment of many obstetrical complications should be taught, not only by methods applicable when skilled assistance, trained nurses, and the most approved instruments are available, but in the circumstances when the attendant has to rely on himself and simpler resources. (3) The pathology of the puerperium. (4) The pathology of the young infant. (5) Artificial feeding of the infant.

(II.) *Methods of Teaching.*

The means at our disposal comprised demonstration-lectures, laboratory, museum and post-mortem work, clinical work, and teaching in wards and out-patient departments. All subjects which involved diagnosis and treatment should be taught during the time that the student was engaged in his clinical work in obstetrics and gynecology; instruction in obstetric anatomy, menstruation, normal pregnancy and labour should immediately precede this course; the student should have completed his course in medicine and surgery, including pathology with bacteriology, before taking the special course. He disapproved of the long, wearisome courses of lectures which were customary in the medical schools, but considered that good lectures, well illustrated by personal experience, were of great value to advanced students. Demonstration-lectures were very valuable, especially if well illustrated and with plenty of *viva voce* questioning. The subjects which could be taught well in this way were the obstetric anatomy of the pelvis and its contents; menstruation; the anatomy of pregnancy, of labour, and of the puerperium; and the mechanism of labour, which should be taught with a foetus, not with the foetal skull only. The whole of the remaining subjects should be taught by demonstration-lectures accompanying clinical work in the wards and out-patient rooms.

With regard to gynecology, the large out-patient departments of the hospitals, if properly organised for teaching, afforded valuable means of instruction, the students attending for three months and having charge of the cases allotted to them, preparing the notes and examining the patients individually with the physician. If the case-taking was done systematically the students would gradually acquire the power of forming correct opinions about the nature of the ailment from the history alone: a very valuable asset to the young practitioner, especially in gynecological cases, where the patient might hesitate to allow him to make a proper examination. This personal responsibility for forming correct opinions for diagnosis, prognosis, and treatment could not be inculcated too soon; it was an unpleasant experience to have to begin to acquire it in practice.

Teaching of Obstetrics in Out-patient Departments.

Out-patient obstetric work comprised two distinct departments: (1) The attendance by students on patients in their own homes; (2) the attendance of pregnant women in the out-patient department of the hospital.

The value of the former to the student was very great. The responsibility he met with compelled him to find out his deficiencies on the one hand, and gave him confidence and self-reliance on the other. The training in the out-patient department was also valuable. He learned to diagnose pregnancy when advanced; to diagnose the position of the foetus and the presentation by abdominal and vaginal examination; to measure the pelvis; to recognise and deal with abnormal presentations and various other complications; to examine the breasts, and what could be done to relieve conditions which might interfere with lactation; to examine

the urine, and in doubtful cases to obtain a catheter specimen; to examine the vulvo-vagina for evidence of infection, and to take the necessary steps for thorough disinfection and treatment. Above all, he would learn the value of the systematic examination of all women advanced in pregnancy and the advantage of being sure that all important details were normal before confinement, and of being forewarned of difficulties and complications.

Gynecology.—Owing to the abundance of surgical material at the present time the student learned too little of the minor gynecology which would come to him in general practice, and was induced to take little interest in cases not needing operative treatment. He learned little of the treatment of the ordinary common cases of dysmenorrhœa or of the methods for the relief of cases of inoperable carcinoma, which he would have to attend to the end.

Organisation of Maternity Wards or Hospitals.

With regard to clinical means for teaching obstetrics, Dr. Griffith said that no branch of medicine and surgery could be properly taught in an out-patient department only, especially when the department was scattered over an area of, say, a square mile, with no real and effective supervision and without the aid of competent nursing. Hospital authorities had provided a few beds for special cases, but though these were of immense value they were but a pittance. He thought that the value of a hospital for teaching purposes was not necessarily in proportion to the number of its beds; this depended on the number being adequate and on the ability of those in charge of it to make the best use of them. At Queen Charlotte's there was the great advantage of teaching at the bedside and in the labour wards mixed classes of students, both undergraduate and post-graduate, together with midwives and monthly nurses, and it would be difficult to determine who gained most from the mixed classes—the students, who soon discovered how little they knew of the nurses' duties, or the nurses, who gradually began to realise their own ignorance and the difference between their superficial training and that of the doctors. This combined training, if general, would, in his opinion, also do much to place the relations of doctor and midwife on the friendly footing of mutual confidence and help that should exist for the benefit of the poorer women and their infants. The organisation of the maternity wards or hospitals in our great teaching centres should be improved and made comparable to those devoted to medicine and surgery. A three months' combined course in obstetrics and gynecology, the whole time being given up to the subjects, would probably prove to be sufficient.

MR. JOHN S. FAIRBAIRN DISCUSSED

The Teaching of Obstetrics and Gynecology from the Standpoint of Preventive Medicine.

He said that he had chosen this aspect of the reconstruction of our teaching methods, because the most definite movement in medicine was clearly that towards its preventive side. The proposed Ministry of Health and the talk of a State Medical Service were indications of how this movement dominated the situation. The case for reform in this direction had been greatly strengthened by the publication of the Memorandum on Medical Education in England by the chief medical officer to the Board of Education, Sir George Newman. He quoted Sir George Newman's chief criticism on the teaching of obstetrics and gynecology:

"Above all, the student is not being taught midwifery from the standpoint of preventive medicine. It is not sufficient to require mere attendance on 20 cases of childbirth, to be got through somehow. There are direct and serious responsibilities resting on medical practice during the ante-natal stage, at the confinement, and post-natal. The maternal accidents of confinement, the gynecological conditions following unskilful obstetrics, and the infant mortality incidental to childbirth must be prevented. The need is insistent and widely recognised."

In speaking of the teaching of preventive medicine, Sir George Newman said:

"But much more important will be the revitalisation of the whole subject of medicine by the experimental, the scientific, and the preventive spirit. For preventive medicine is not a subject which can be taught *ad hoc* or in a watertight compartment. Its purpose and its spirit should pervade the entire curriculum and system of medicine—the practice of physic, surgery, obstetrics, psychiatry, pediatrics, and the other specialities, for they all need the inspiration of the true preventive method, yielding a deeper and a wider consideration of each patient."

Teachers of midwifery and gynecology had special opportunities and, therefore, special responsibilities in this regard. Midwifery and the diseases of women must be considered

as two branches of one subject and studied clinically at the same time and under the same teachers. Sir George Newman made a point of the teaching of the two subjects of obstetrics and gynaecology being taken together. In this way the study of the normal and abnormal processes of reproduction would go hand-in-hand with the diseases of the organs concerned in reproduction, so that cause and effect would be considered together—labour and abortion in the production of pelvic disease, and pelvic disease in the production of abortion and sterility. This simultaneous soaking-in of the two divisions of the one subject was essential if the preventive aspect was to be emphasised. In the one the student was taught how to avoid the injuries and infections of child-bed, and in the other was shown their consequences, immediate and remote.

Hospital Provision for Teaching.

The medical school must provide for the adequate training of its students. (1) The maternity centre would require both out- and in-patient accommodation for the pregnant woman, the woman in labour, and the mother and nursing. In many hospitals this would involve an increased provision of beds for maternity work, say five or six beds for pregnant women, a maternity ward sufficient to allow each student five or six cases indoors before attending cases in the outdoor district, and three or four observation beds and cots for mothers and infants. As this provision for teaching was absolutely necessary, it was useless to accept a *non possumus* attitude from medical colleagues or hospital committees. The accommodation must be provided if the medical school was to train the practitioners of the future. Arrangements might be made with lying-in hospitals, Poor-law infirmaries, maternity centres, and infant welfare clinics in the neighbourhood, and the work of the student carefully organised so that he obtained a proper perspective of the scheme as a whole. (2) The department for diseases of women was part of the establishment of every hospital with a medical school. Provision should be made for the reception of cases of puerperal infection in all stages, and for cases of gonorrhoea in the earlier stages, as they were often withdrawn from the student's range of vision by being relegated to a special venereal disease clinic, thus spoiling the completeness of the preventive view. (3) A full staff of workers would consist of (a) medical officers and the students; (b) nurses and midwives for indoor and outdoor patients; and (c) almoners and health visitors.

Outline of Requirements.

He then described the atmosphere in which the student should be trained during three months in the practice of midwifery and diseases of women. He laid special stress on the student being taught in the clinic for pregnant women to look for the beginnings of disease and to consider the individual character, mode of life, and home conditions of each patient as factors in her case. In the maternity ward all preventable conditions which occurred were discussed as to why they were not foreseen and what could have been done—eclampsia, macerated foetus, or some unexpected difficulty in labour. All failures as well as successes in ante-natal management should be emphasised, especially failures to breast-feed, retracted and sore nipples, and such points which were not likely to attract the student's attention unless specially drawn to them. His interest was easily stimulated in breast-feeding as an important part of the prevention of infant mortality, and this was one of the matters on which pupil midwives, nurses and medical students could all be taught together.

On the district the student had to adapt methods acquired under ideal conditions with every convenience to his hand to conditions quite the reverse—in itself a great education. The student should be associated in the work of the social side—obtain reports from it as to his patients, and be encouraged to make a report to it on ceasing attendance. If instructed on the proper points to observe he might give much valuable information as to the hygiene of the home, the woman's capacity as a mother, whether she followed her instructions as to the feeding and care of the baby, and possibly be able to offer suggestions as to special watching of the patient afterwards. A greater effort must be made to interest the student in the study of the baby, and to keep up the study long after the infant has passed from the care of the obstetric department.

This led up to the very important question as to where the dividing line between obstetrics and paediatrics

was to be drawn. There was something to be said for mother and nursing remaining under the obstetric department and the weaning and older children going to the children's department. The mothers who were patients of the obstetric side during pregnancy, labour, and lying-in were known and understood and more readily influenced by its officers; difficulties in breast-feeding and the overcoming of them were frequent problems in the maternity ward, and naturally a continuance of the same interest and supervision was advantageous. The plan in contemplation at St. Thomas's Hospital was that of the appointment of a special officer for the child-welfare clinics, who would begin by taking part in the teaching on the infant in the maternity ward, where he would become known to the mothers and learn to know them, and thus preserve continuity from the maternity clinics to the baby clinics.

The beds for mothers and nurslings need be but few—three or four should suffice unless the department was very large—and into them should be admitted cases of difficult breast-feeding and such like; they were as necessary for the student's education as for the mother's. The student should follow the mother and child through the clinics so as not to lose the practical object lesson in prevention which a complete survey of the scheme would give him. The student's time was now so far occupied with work that had a distinct examination value that he could not spare the time for work that had only a practice value, and therefore little more than casual attendance at the welfare clinics could be expected, except perhaps by a few of the more far-seeing or specially interested students. Every student should have a six months' training in obstetrics, gynaecology, and paediatrics. The first half of this term would be as sketched and would be followed by three months in the various children's clinics.

Creation of Atmosphere of Preventive Medicine.

He drew attention to the "psychological aspect of preventive medicine, hitherto greatly neglected." We had become so absorbed in operative work and hospital accommodation had been so monopolised by operation cases that our teaching material was in no way representative of the future practice of our students. The resulting tendency had been to overlook the most common of all factors in the production of disability, overstrain and mental stress. In women with pelvic symptoms such causes as domestic worries, family anxieties, and marital and sexual troubles played a very important part. As Sir George Newman said, "preventive medicine to be effective must deal with the man, the whole man, as an individual as well as member of the community." In short, we must acknowledge the special responsibility on us to create an atmosphere of preventive medicine round our teaching, and for this purpose every medical school must be provided with a complete maternity and child-welfare centre. By co-operation with the paediatric side instruction covering a period of six months should be continued from midwifery into child welfare, so that the student, while acquiring the practice of obstetrics, gynaecology, and paediatrics, was made to feel that he was playing at any rate a minor part in a scheme of preventive medicine, the complete working of which he could visualise. As the study of obstetrics and gynaecology brought to the student "new applications of his clinical experiences, new social relationships," it was incumbent on us not only to teach the actual practice of these subjects but to give the student a wider outlook and to teach him to apply his professional knowledge towards increasing the resistance of the normal to disease and arresting the progress of incipient disease, and so raising the whole standard of the health and physique of the nation's mothers and children. This involved a fuller consideration of the social factor, the psychological factor and other factors affecting the life and well-being of the individual patient and of the community as a whole.

Dr. LOVELL DRAGE spoke on

The Teaching of Obstetrics and Gynaecology from the Point of View of a General Practitioner.

He drew attention to the increasing demand made upon the time of the student by the teachers of special departments. The time of the student could be saved by the exclusion of the preliminary subjects of study; chemistry, physics, morphology, and physiology should be undertaken previously to registration as a student; and, until a sufficient test had been applied, registration

should be denied. A very large part of gynæcology was purely surgical and should be treated as part of the course in surgery. The subjects to which the teachers of diseases of women and midwifery should devote themselves should be just those which were theirs before surgery arrived at its present state of perfection. The special importance of a knowledge of the various infective agents should never be out of the mind of the student, and would never be if the course in general pathology had been sufficiently appreciated. If practitioners would but consider it a disgrace when they had a case of infection after delivery there might be a chance of the practical banishment of puerperal fevers caused by infection. Knowledge of the infections of the genital tract of women was of more importance to the general practitioner than a knowledge of anything else in the whole of the subject of obstetrics and the diseases of women. Much depended upon the teachers of the subject and much less on schemes of teaching. The subjects of obstetrics and gynæcology were not large in themselves, and three months would be sufficient time for students to expend on them before examination at the final Board.

The question now arose—especially in view of the prospects held out by the promotion of a Ministry of Public Health—whether all students should be compelled to undertake the subject before registration as practitioners. Many men did not intend to practise obstetrics or dabble in gynæcology; and there did not appear to be any reason why the time and energy of such should be wasted in cramming up sufficient knowledge to pass an examination. The basis for the demand to the medical profession that it should take up the work of supervision over maternity centres appeared to be that it was impossible to manage an A1 empire with a C3 population. One reason for the statement that we were a C3 population was that the medical profession for many years past had successfully prevented the destruction of the class which in Dame Nature's scheme was classed as unfit. In addition, the birth-rate had steadily declined. In his sanitary district in 1886 there were 220 births; for the five years before the war the average was 190, with an increase of population of nearly 2000. The proportion of the fit to the unfit who are born into the world was probably about the same as it had always been, but we had by our attention to the unfit increased the numbers of the unfit who reached maturity. Nature provided, if left alone, a large excess of increase in our species in order to provide for the loss of the unfit. The medical profession prevented to a considerable extent the loss among the unfit, and other factors had diminished the excess in production. It did not appear that there was any reason to suppose that the supervision of pregnant mothers would produce any other result than that of raising up to maturity more unfit adults. The production of a healthy stock depended upon the healthy condition of the parents, and resistance to disease depended upon factors which at present were little understood. The practical question remained as to whether a large expenditure of public money was justified in the absence of any reason for supposing that a larger stock of healthy children, who had strong resistance to disease, would result.

The Importance of Better Obstetrical Teaching.

Dr. AMAND ROUTH thought that Dr. Drage's proposal that general surgeons should perform the operations which were now performed by gynæcologists would be a retrograde step. In a lying-in hospital the ante-natal clinic should be obviously an important part of the training of the students and midwives, and should be attended by those actually engaged in their practical midwifery. Amongst the subjects there taught were the recognition of venereal disease and the recently proved safety of dealing with syphilis by salvarsan during pregnancy and after birth; the recognition of tests for early toxæmia, especially now that accidental hæmorrhage with its 75 per cent. of fatal mortality was believed to be often toxæmic in origin, and might be preventable; pelvic contractions, both the major and minor varieties; the significance of the previous maternity history of the mother and her children; such complications as heart or bronchial disorders, old kidney disease, diabetes, Graves's disease, and pregnancy pyelitis. Labour, whether natural, prematurely induced, manipulative, or operative, should be taught in the maternity wards, and knowledge should be imparted regarding lactation, and

hand-feeding where lactation failed. Students should be taught to assist in laboratory research of all kinds, such as special urinary tests for toxæmia, examination of all expelled products of conception for detection of spirochætes and other causes of death, attempts to unravel the mysteries of toxæmia, and of the functions of the syncytial ferments, examination of milk, &c. Opportunities should be found for giving students information on the causes of sterility by malformations, gonorrhœa, or as the result of operations, plumbism, X rays, &c.; on the causation of the low birth-rate, such as sterility, criminal abortion, and methodical, chemical or mechanical restrictions of child-bearing. The responsibilities of doctors in cases of criminal abortion were useful subjects to learn before private practice began.

In urging the necessity for better obstetrical teaching it was important to contemplate the fact that out of 1000 conceptions probably 250 infants died during gestation and before their first birthday, and that this proportion of deaths was doubled in illegitimate cases. Dr. Drage's statement that "medical supervision would do no more than raise up to maturity more unfit adults" was extraordinary. There seemed every reason to believe that if the methods advised in the two addresses were carried out, at least half the ante-natal and early post-natal infantile deaths would be avoided, for doctors would be thoroughly equipped in the knowledge of the preventive hygiene of pregnancy, parturition, and the puerperium.

Advocacy of a Radical Change.

Dr. G. F. BLACKER said that he had listened to the remarks of the openers of the debate with much interest, but he did not think that any one of them had really reached the root of the matter. He thought that they should seek an answer to two questions:—1. Why was the standard of teaching in midwifery not of so high a level as that of medicine and surgery? 2. Why was the reputation of the London School of Obstetrics for research so relatively poor? He imagined that this debate was being held because it was recognised that the teaching in obstetrics was unsatisfactory, and therefore it was important to endeavour to find an answer to these two questions.

He thought the answer to the first question was to be found in the fact that most of the practical teaching was done by junior men, registrars and house surgeons who often had become qualified only recently. From the very nature of the work it was generally impracticable for one of the honorary staff to be present when patients required operative interference in their confinements, and a student might well pass through the whole of his midwifery training and never see one of the senior staff conducting an ordinary confinement or performing any one of the common obstetric operations. It was impossible to arrange for practical teaching in midwifery at the bedside or in the theatre at set hours, and therefore a great deal of this part of the teaching had to be done by junior men with but little experience. It was quite easy for senior members of the surgical and medical staff to carry out teaching at the bedside, but it was very difficult for the senior obstetricians to do so. In his opinion, then, it was necessary not to consider what the student should be taught but how he should be taught and what changes were possible to overcome the present unsatisfactory state of affairs.

It seemed to him that there was only one way out of the difficulty—namely, the provision of four or more large lying-in institutions in different parts of London in which, under the same roof, the student could receive his practical teaching in midwifery, gynæcology, and maternity and child welfare. These institutions should be large enough to provide for all the medical students in London, and must be officered, if the students were to be taught properly, by resident whole-time properly paid senior teachers. They should be either whole-time or full-time. By the first he meant debarred from private practice altogether; by the second, compelled to devote so many hours a day to their work and not allowed during these hours to undertake any other work. They should further have the services of whole-time paid assistants and all the laboratory facilities necessary for the proper carrying out of the pathological work concerned in the treatment of their patients, and for research work. The present lying-in hospitals had not, in his opinion, justified their existence so far as teaching was concerned, they should be closed or amalgamated with these larger institutions.

The student should be required to spend four months in the practical study of midwifery and gynaecology, of which two should be devoted to gynaecology and two to midwifery. During his term of duty in midwifery he would be resident in the institution while on duty in the wards, and he would spend the second month of his attendance doing duty in the extern maternity department. In these circumstances students would receive their teaching from teachers of equal standing and experience to those engaged in the teaching of practical medicine and surgery, they would have ample opportunities of seeing large numbers of gynaecological and obstetrical cases and at the same time would be able to attend in the maternity and child welfare department. It would further be possible to carry out the students' practical training in the best possible surroundings. The present small number of lying-in beds in most of the general hospitals were of very little value and were wasted in most cases, as it was impossible for the students to live near or in the hospitals, and they were therefore not available when wanted to attend at emergency operations. Arrangements of this kind would enable any man who desired to do so to carry out research work with credit to himself and to the school to which he belonged, and such a development would be in keeping with the schemes which were on foot at the present time for the appointment of whole-time paid teachers in medicine and surgery. He did not think that anything short of this very radical change would ever succeed in improving the present unsatisfactory methods of teaching practical midwifery in London.

Further Discussion.

Dr. T. W. EDMUND placed the responsibility for the poorness of teaching at the present time on the system of multiple hospitals. This arose from the over-staffing of the hospitals, so that each member of the staff of one hospital found it necessary to seek additional clinical material in another. Moreover, the clinical material in the hospitals was not representative of the future work of the students.

Dr. HARDLEY HOLLAND attributed the neglect of the student to (1) the claims of the midwife, who had absorbed most of the lying-in beds; (2) the apathy of modern gynaecologists towards ordinary work; (3) the idea that it was unnecessary to train the student to a high standard if this could not be maintained in after life. That obstetrics and gynaecology should be treated as separate subjects was the opinion of a few, who thought that by this means the obstetrician could devote more time to the baby; but he would like to see the infant taken over entirely from its birth by the paediatrician, who should also be responsible for the corresponding teaching and research. He disagreed with Dr. Drage with regard to antenatal supervision. It permitted a diagnosis of the presentation, and of the presence of syphilis, albuminuria, tumours, &c. Moreover, the mothers suffered from neglect of supervision as well as the babies.

Sir WALTER FLETCHER accentuated the importance of the teaching of the normal physiology of reproduction, including lactation, which at present were imperfectly understood by the student, even at the time of his qualification.

Dr. F. J. MCCANN advocated State-subsidised maternity hospitals in London and throughout the country, and the adoption of the Continental system of whole-time resident assistants, paid a salary of, say, £500 a year. The appointment should be for five years, and the holders should travel for at least one month annually in order to bring back reports of the work in other schools. Means must be found to retain the poor man who had ability. The need had been accentuated now that the training of midwives and nurses had to be undertaken. Till such hospitals were established London would not take its place as a leading teaching centre.

Dr. E. L. COLLIS pointed out that now that women were being employed industrially to such a great extent, the student should be given definite instruction as to the amount and kind of work, &c., which a pregnant woman should be allowed to do, and should be put in a position to be able to answer questions which might arise in the course of his work as medical officer to a factory.

Other Criticisms and Suggestions.

Mr. VICTOR BONNEY said that teaching must be judged by its results. The maternal death-rate due to pregnancy and labour had remained constant for the past 70 years in spite of great progress in knowledge. Deaths still occurred from

toxæmia and sepsis. Pregnancy was the growth of a neoplasm; labour was the occurrence of self-inflicted wounds; the puerperium was the healing of those wounds. A great proportion of deaths could be prevented by the application of surgical principles. He hoped to see the day when midwifery would be regarded as a subsection of surgery and taught as such.

Dr. H. WILLIAMSON preferred the clinical system to that in vogue on the Continent. Obstetrics and gynaecology should be studied simultaneously. Each student should be compelled to train for one month in a lying-in hospital before doing extern work, and should personally deliver four or five women under competent supervision. This instruction was now largely left to midwives. Every general hospital should have a lying-in ward, officered by a good teacher who knew his work. He did not agree that a large institution was necessary, for it would introduce the German system of lectures and demonstrations. Students should be examined by their own teachers, in the presence of an assessor if thought desirable. The three failures were haphazard training, fallacious examination, and the absence of an atmosphere of research.

Dr. A. LAPHORN SMITH emphasised the necessity of impressing upon the student the importance of examining the urine to forestall eclampsia, and of wearing rubber gloves in order to prevent sepsis. He thought that there should be a great Rotunda Hospital for London with several branch ones, where thousands of poor women could be delivered by skilled obstetricians under aseptic conditions, who would otherwise be confined at home in most unfavourable surroundings. In time private rooms should be available for the rich, and the revenue from this source, as well as from the middle class, and even a little from the poor, would go a long way towards making these institutions self-supporting. The deficit could be made up in various ways, such as bequests and donations. The master would perform the deliveries in the daytime and the assistant would be in attendance at night, but every delivery should take place in the theatre under anaesthesia, and every student in a few months should have been present at a hundred cases instead of half a dozen, and have observed the methods of the very ablest exponents of the art. Each medical school might in turn be responsible for the service, under the supervision of the master, who would be elected by all the schools for three or five years. His reward would be a large consulting practice.

Lady BARRETT thought that at least six months should be devoted by the student to the study of the two subjects, of which at least one month should be spent at a lying-in hospital, before doing outside maternity work. A month should also be spent in the combined study of the pathology and physiology of obstetrics and gynaecology, the student at the same time keeping in touch with the clinical aspect of the work by attending the physician in the wards and exhibiting the specimens from the cases.

Dr. R. W. JOHNSTONE described the methods of teaching in vogue in Scotland. Teaching, including that of minor cases, should be done by the senior teachers. He did not agree with the appointment of a whole-time teacher; the emoluments would not be such as would attract the best type, and the teacher, being out of touch with the conditions of general practice, would become unable to impart to the students what they would be likely to require.

Dr. T. G. WILSON compared the teaching of this subject in London with that of other large centres. With their valuable clinical material he attributed their failure to attract overseas students to a faulty system of teaching. In such hospitals as the Johns Hopkins there were working under the head of the department as many as five or six assistants, who were only permitted to teach the students after having acted as assistant for three or four years, and having done at least one year's pathological work in the department. The subject could be taught as well in a small as in a large institution.

Dr. H. RUSSELL ANDREWS agreed with the general proposition that obstetrics and gynaecology must be taught together, that old-fashioned formal lectures were not of great value, and that students should not be sent out to attend patients in the district until they had had a thorough midwifery training in the wards. He agreed with Dr. Lovell Drage that "the medical profession prevents to a considerable extent the loss among the unfit," but felt much more deeply that the medical profession does not prevent a large unnecessary loss among the fit. The only

way to prevent this was by improving the teaching of midwifery. He disagreed emphatically with Dr. Lovell Drage's opinion that supervision of pregnant women would produce no other result than that of raising up to maturity more unfit adults. He pointed out that in cases of syphilis and in minor degrees of contraction of the pelvis, to take only two examples, supervision of pregnant women resulted in the production of fit citizens. He considered that a department for medical supervision of pregnant women formed an integral part of a modern teaching hospital.

Dr. GRIFFITH replied.

SECTION OF PATHOLOGY.

Diffuse Emphysema of the Wall of the Small Intestine.

A MEETING of this section was held on Feb. 4th, Dr. W. BULLOCH, the President, being in the chair.

Mr. O. A. R. NITCH and Professor S. G. SHATTOCK described a remarkable example of the above rare condition, which was unexpectedly found during an operation carried out for a simple stricture of the duodenum immediately beyond the pylorus, associated, presumably, with the presence of an ulcer. The patient had suffered for many years from pyloric obstruction, the stomach being so dilated as to reach the crest of the ilium. He had been in the habit of washing out the organ with a soft rubber tube. A gastro-enterostomy was successfully performed, the symptoms completely disappearing afterwards. A small V-shaped piece of the affected intestine was removed for the purpose of investigation, the parts being immediately sutured without untoward result. In this the gas cysts were found to lie beneath the mucosa, the other tissues being here uninvolved. When exposed at the operation, the whole of the small intestine, with the exception of the duodenum and the first foot of the jejunum, was covered with blebs of gas.

The condition itself fell into a group to which the name "pneumatosis" had been applied—a group which included the various lesions due to the presence of air or of gas in the different structures or cavities of the body. Into it fell, besides common emphysemas (bacterial and mechanical), the aspiration of air into the vagina or rectum, œsophagus, and stomach; into the peritoneum during laparotomy; the passage of gas from the intestine into the peritoneal cavity, apart from discovered perforation, in cases of chronic obstruction, &c. The entry of air occurring in operations carried out in the Trendelenburg position upon the bladder or vagina was due, of course, to the negative pressure caused by the gravitation of the abdominal viscera; in œsophagoscopy, the inflation of the canal arose from the negative pressure within the thorax. After punctured valvular injuries of the abdominal parietes a local emphysema was at times observed (M. Romanis), due to the inspiratory movements, which was liable to be misdiagnosed as indicative of perforation of the intestine. In birds Hunter had pointed out that fracture of the bones containing air might be followed by a local emphysema. The only homologue of such a result in the human subject was furnished by the escape of air that sometimes took place from the frontal sinus after fracture.

In discussing the etiology of the condition recorded, a bacterial factor was excluded by the study of sections made from the piece excised. Nor during life did the tissues exhibit any traces of inflammation. The cysts or spaces were lined with a single layer of endothelium, a multinucleated cell being here and there intercalated. After excluding a secretion or liberation of gas from the tissue plasma as an explanation, the etiology became reduced to a mechanical one. The condition could not be ascribed to distension of the gut itself, since there was no obstruction on the distal side, but air or gas must have been driven from the distended stomach through the base of an ulcer immediately beyond the pylorus, into the intestinal walls, the peristalsis of the gut facilitating the onward movement of the gas. Brouardel ("Death and Sudden Death") had described a case of submucous emphysema of the stomach about a recently perforated ulcer, but proof was wanting that the condition had occurred during life. And the same doubt existed in regard to the case recorded by Haller, in which a tympanitic distension of the intestine was accompanied with the formation of gas blebs beneath the peritoneum.

J. P. Frank: "De Morbis Hominum Curandis," 1821.

MEDICAL SOCIETY OF LONDON.

Intrinsic Cancer of the Larynx.

A MEETING of this society was held on Feb. 10th, Major A. F. VOELCKER, R.A.M.C. (T.), the President, in the chair.

Sir ST. CLAIR THOMSON read a paper on Intrinsic Cancer of the Larynx, which furnished a sequel to that read before the same society on Feb. 12th, 1912. Laryngeal cancer, he said, was not a common disease, but, fortunately, the intrinsic form was more common than the extrinsic. Of 212 cases Semon found the disease intrinsic in 136. Chevallier Jackson's figures showed that the intrinsic form was more frequent in the proportion of 98 to 43, and Schmieglow, in 66 cases of intralaryngeal cancer, found the disease limited to a vocal cord in 36. Only a restricted proportion of cases came to operation because of delay in diagnosis and sometimes because the patient did not present himself sufficiently soon. Hence the amount of clinical material was always small. In 18 years he had only encountered four hospital cases which justified a laryngofissure, while he had performed it 34 times in the smaller field of private practice. Of these 38 cases of intrinsic laryngeal cancer which had been operated upon, 22 were alive and well without recurrence at periods varying from 6 months to 10 years since the operation. Seven cases survived the operation but died from other causes at periods varying from 10 months to 10 years later. Local recurrence took place in only 5. Two cases died from recurrence in the glands, but without recurrence in the larynx. In one this occurred 7½ years after laryngofissure; in the other within 7 months. Two cases are alive, but recurred. In one the disease recurred in the glands of the neck 1½ years after laryngofissure, the glands were operated upon, and he is now well. In the other recurrence was suspected in the subglottic area and on the opposite side 3½ years after operation.

In these cases, comprising 4 females and 34 males and varying in age from 40 years to 75, no patient had died from a cause attributable directly to the operation. These figures, taken in conjunction with those of Semon, Chiari, and Schmieglow, confirmed the view that the results are exceedingly good and compared favourably with those obtained by surgical treatment of cancer in other internal organs, and that the advance was striking. The figures also showed that the first year after operation was the anxious one as regards recurrence. He felt considerably diminished anxiety if the third month passed without a suspicion of regrowth. When an epithelioma was limited to a vocal cord and recurred within 12 months, he would regard it as an incomplete removal. Recurrence was more apt to take place and after a longer interval when the anterior commissure or subglottic area was involved. In none of the 38 cases had a laryngofissure been performed for cancer, and the disease found to be of another character, but in several cases the diagnosis had to be deferred for a time, varying from a few months to a year.

The Operation.

In addition to the usual preparations, the mouth and teeth are rendered as clean as possible and tobacco and alcohol are reduced to a minimum or cut off for three days before. A dose of bromide (15 to 20 gr.) is given on the previous evening, but neither morphia nor atropine. Half an hour before the operation the line of the incision is infiltrated with eudrenine (a solution of eucaine and adrenalin). The skin of the neck is purified with soap and water and a carbolic dressing, and not damaged by painting with iodine. A general anæsthetic, preferably chloroform, is given in the usual method. One long incision is made from the thyroid notch to the sternum. 10–15 drops of a 2½ per cent. solution of cocaine, to which a few drops of adrenalin are added, is injected intratracheally, and a similar injection made through the crico-thyroid membrane. Medium tracheotomy after dividing the thyroid isthmus, if it cannot be hooked upwards and downwards, can then be carried out without spasm or cough. A large-sized Durham tracheotomy tube is then introduced and the thyroid cartilage divided exactly in the middle line with saw, knife, scissors, or shears. A Killian's median rhinoscopy speculum is then used to dilate and inspect the endo-larynx. After application of 5 per cent. cocaine and the insertion of a gauze plug through

the thyroid opening over the top of the tracheotomy cannula, the larynx is semi-dislocated sideways to bring the affected cord more *en face*. This is then raised, with all the soft tissues, by a subperichondrial dissection. The outer perichondrium of the thyroid cartilage is peeled off and the greater portion of the ala clipped away, and the growth subsequently removed, with a good margin around it, with curved scissors. Bleeding is arrested by pressure, the tracheal plug removed, and the thyroid opening closed by drawing the soft tissues together over it. Deep (cat-gut) and superficial (silk-worm and horse-hair) sutures close the whole external wound, except opposite the tracheal opening. The tracheotomy tube having been removed and a dry-gauze dressing applied, the patient is returned to bed in a sitting posture.

He spoke emphatically of the value of open chloroform administration in these cases, at first through the mouth and later through the tracheotomy cannula. Most of the patients were able to swallow within a few hours and many of them sat out of bed and read their newspaper the same evening. It was the exception for the patient not to be sitting up in a chair next day and eating semi-solid food. The preliminary infiltration of the skin incision with eudrenine and the intra-tracheal injection of a 2½ per cent. solution of cocaine greatly attributed to this satisfactory result. He preferred one long incision to the two which had been proposed—i.e., one over the larynx and one for the tracheotomy—considering the slight cosmetic gain in the latter procedure more than counterbalanced by the greater facility and safety of one long incision. He could see no gain in abandoning the safeguard of tracheotomy. There was no need to plug off the pharynx through the split larynx. In 25 cases the tracheotomy tube had been withdrawn as soon as the operation was completed, but in two it had to be replaced for sharp hæmorrhage. He was glad that in both there had been a preventive tracheotomy, and that the skin in the neck had not been stitched up over it. He saw no great objection to retaining the tube for the first day, particularly when there was a tendency to bleeding at the time of the operation, or the patient was congested or with a history of alcohol and tobacco, or when the growth was very extensive or largely subglottic, or should no experienced surgeon be at hand. Excision of the thyroid ala left no drawbacks and facilitated removal of the growth and control of bleeding.

After-treatment.

His patients were placed in bed with a bed-rest, almost sitting upright. The same evening many could sit out of bed and were able to drink sterilised water. The appearance of a large granulation in the wound during healing sometimes caused much anxiety. In 11 cases it was detected at times varying from 15 days to 2 months after laryngo-fissure. It appeared on the cicatrising cord or in the anterior commissure. In 4 cases it was left alone and took from 3 to 12 months to disappear. Of the other 7 cases he removed it through the mouth and under cocaine by McKenzie's duck-bill forceps in 5. In one of the remainder it was subglottic in position and so large that stenosis was threatened, and tracheotomy had to be done. The tube was worn for six weeks, after which time the granuloma had disappeared. In the other a large granulation, the size of a cranberry, appeared in the anterior commissure two months after operation and proved to be an exostosis. It caused little trouble and was still present two years after the operation. The patient was 72 years old. Most patients were sitting out of bed and eating solid food on the day following the operation. They suffered no shock and recovered rapidly. The windows were left freely open day and night. The old paraphernalia of screens round the bed, closed windows and "even temperature," steam kettles, and such like had long been abolished. It had been his custom to keep the patients silent for the first three weeks. They then started whispering, and as soon as a good cicatricial cord had replaced the one removed they were not only encouraged to speak, but in cases of bad speakers further improvement was secured by sending them to a voice trainer. The voice was always sufficient for the ordinary purposes of life; schoolmasters had been able to continue their profession and others could make public speeches. But all the patients had not been kept silent for these first three weeks, and he thought that by earlier resumption of vocal use there had been better compensatory results and not that

tendency to contraction which had been observed in two of the most silent cases. He now thought a week's silence was sufficient. If patients applied early with epithelioma limited to a vocal cord the death-rate should be nil, the restoration of voice satisfactory, and the cure lasting.

Discussion.

Surgeon-General BIRKETT, C.A.M.C., agreed that fixation of the cord was no invariable sign. All must have seen cases when it was absent.

Mr. WILFRED TROTTER said that his practical experience was confined to conditions extra-laryngeal. He had been removing the ala of the thyroid cartilage for ten years for another reason—namely, to obtain access to the upper part of the larynx—and consequently had removed the ala more completely, including both cornua. He had probably removed the whole ala 50 times, and there was no evidence that it interfered with the recovery of the patient's voice. It was a harmless and very useful procedure. He had never ligatured or clamped the thyroid isthmus, and no evil results had followed. An important reason for dividing the isthmus was that if the tracheotomy tube had to be removed the isthmus could not descend over the opening and hinder its replacement. He had known lives sacrificed in this way by leaving the isthmus intact.

Dr. W. HILL mentioned a case in which fatal hæmorrhage had occurred as evidence of the value of retention of the tracheotomy tube and plugging temporarily, for by this means death might have been avoided.

Mr. HERBERT TILLEY had operated upon 22 of such cases. He thought that this kind of cancer might form a basis from which some clear ideas might be evolved on the infectivity of the disease. In this respect cases in which growth recurred 10, 12, or more years after operation were interesting. He doubted whether "recurrence" was the proper term, and queried whether an immunisation took place and that the so-called "recurrence" followed when that immunisation wore off.

Mr. IRWIN MOORE advised that the tracheotomy tube should be left *in situ* for a few hours if neither the surgeon nor a dependable substitute were within immediate call. There was particular risk in leaving a patient with no tube after low tracheotomy. The results of operation were so good chiefly because the operation was done early and the diagnosis was established. He hoped for more co-operation with the general physician in cases of persistent hoarseness.

Mr. C. MCMAHON offered the following practical suggestions for re-education of the voice in these cases: 1. Develop the sterno-thyroid and sterno-hyoid muscles, and keep the larynx low. Use a tongue depressor to help to accomplish the descent of the larynx. 2. Make the patient speak as little as possible until a deep pitch of voice is established. 3. Let the breathing movement be inferior lateral costal, with a small but definite expansion, and let the motive power of the voice be the powerful contraction of the abdominal muscles. 4. When the larynx is established in its low position instruct the patient that voice gets its chief resonance in the head and chest, and that the throat is a conduit pipe between them, and must be entirely uncontracted; and also that free lip movement increases oral resonance. If further vocal treatment is necessary the resonator positions of vowel sounds and clearness of articulation generally should be taught. It was safe to say that a really useful voice could be anticipated in practically all cases.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Endothelioma of the Ovary.—Exhibition of Specimen.

A MEETING of this section was held on Jan. 10th, Dr. H. JELLETT being in the chair.

Dr. J. S. ASHE read a paper on Endothelioma of the Ovary. He had removed the ovary and had previously shown the specimen to the Academy. Three months after the ovary had been removed by him and Dr. Purefoy the patient had become pregnant and was delivered of a full-term baby, the confinement being uneventful. At the time of the operation it was seen that the other ovary was small and atrophic, and he was surprised when she became pregnant.

Dr. R. D. PUREFOY said that the affected ovary was so little enlarged and so little troublesome that it might very

easily have been overlooked. The healthy ovary was so small and shrunken that its functional activity seemed somewhat problematical. The return of menstruation and conception shortly after the removal of the diseased ovary suggested that some inhibitory action was exercised by the diseased organ.

Dr. H. JELLETT said that he did not approve of leaving the second ovary if the first was known to have undergone malignant change of any kind, as the danger of a simultaneous malignant condition in both ovaries was too great.—Sir W. SMYLY and Dr. B. SOLOMONS also spoke.

Dr. JELLETT showed a pyosalpinx and ovarian abscess removed from a patient aged 23, who had a double uterus. The left side alone was affected, the right horn of the uterus and corresponding ovary and tube being quite healthy. The uterine cornu on the infected side was also removed. The pus from the abscess contained streptococci and colon bacilli. The patient was making a good recovery.—Dr. R. J. ROWLETTE also spoke.

500 Consecutive Operations at Mercer's Hospital.

Dr. BETHEL SOLOMONS read a paper on 500 Consecutive Operations Performed at Mercer's Hospital. The main conclusions arrived at were that: 1. Skin disinfection was best accomplished by some reagent which hardened the skin. Ether followed by iodine was an excellent method. 2. There was less chance of pulmonary embolism if the patients were encouraged to move about freely in bed after operation. A lengthy stay in bed was inadvisable. To prevent pneumonia and pneumonitis care should be taken that the patients were warmly clad going to or coming from the theatre. 3. Curettage, when carefully performed, was a beneficial operation. 4. Of the many operations described for the cure of backward displacement, the modification of Tod Gilliam's technique, which he described in the paper, had been found to be the best. Ventral suspension and Alexander-Adams's operation had their indications, and ventral fixation was satisfactory after the menopause. 5. When it was necessary to treat sterility by operation it was justifiable to open the abdomen to examine the state of the adnexa, even though there were no marked signs of disease. Tubes of normal size with closed ostia, hydrosalpinges, and very small cysts of the ovary were often discovered. 6. This paper on immediate results of operation for gynaecological ailments was presented as a preliminary to the presentation at a later date of the remote effects, which were more important. The percentage mortality was small, the morbidity was practically nil, and the after-results were excellent. In a large number of operations for the cure of sterility there were no deaths. By comparing these results with those obtained by the workers in radium and X rays knowledge could be gained as to which was the better.

Sir WILLIAM SMYLY said he believed in the modified Gilliam operation for backward displacement. Despite the unfortunate results which had been reported following ventral suspension, he still did the operation with satisfactory result. He did not approve of Alexander-Adams's operation, as he liked to see the inside of the abdomen. He agreed with the main principles of Dr. Solomon's paper.

Dr. ELLA WEBB asked if the cases of pneumonia were recent and if pure ether was the anæsthetic employed. She agreed that great care must be taken to keep the patients warm in going to and coming from the theatre.

Dr. R. J. ROWLETTE said that a definite diagnosis as to malignancy in large ovarian tumours was sometimes impossible. He thought that most papillomatous tumours were malignant. He suggested that chloroform might be reintroduced as an anæsthetic when the doctors came back from France, and he did not welcome the idea.

Dr. ASHE said that he agreed with the author of the paper that it was important to exclude the male as the cause of sterility before operating on the female.

Dr. JELLETT considered Alexander-Adams's operation to be the ideal one for all cases of undoubtedly uncomplicated backward displacement, but thought that it was contra-indicated in cases associated with sterility or any possible pelvic complication.

Dr. SOLOMONS, in reply, said that he had had no recent cases of pneumonia. Ether, or gas and ether, was the anæsthetic employed in his cases, and he would never permit the use of chloroform. He thought that many women would be saved unnecessary operations for sterility if the male semen were examined.

Reviews and Notices of Books.

The Physiology of Industrial Organisation. By Professor JULES AMAR, Director of the Laboratory of Physiological Research in the Conservatoire des Arts et Métiers, Paris. Translated by BERNARD MIALL. Edited by Professor A. F. STANLEY KENT, M.A., D.Sc. With 135 illustrations. London: The Library Press, Ltd. Pp. 371. 30s.

So excellent a book as this must inevitably be translated sooner or later. The French edition has already been reviewed in THE LANCET¹; the translation has been admirably carried out by Mr. Bernard Miall, who while retaining the French turn of thought has not failed to write excellent English. The book has been edited by Professor Kent, who in addition to writing an introduction has supplied some useful notes. The shorter hours of work, of which there are now more than indications, render all the more important the organisation of industrial work. This book gives us a timely exposition and criticism of F. W. Taylor's methods of increasing output in factories. Taylor apparently judged the optimum rate of work by means of an instinctive knowledge of the appearances of fatigue acquired as the result of experience; Dr. Amar points out that observations as to the degree of fatigue produced made at a glance cannot replace objective tests and measurements. In the case of work performed by war cripples the physiological limitation of great numbers of persons of this class, the necessity of using them in good earnest, and the social problem created by their employment in industry demand a completer system of scientific control capable of analysing all the factors of human energy.

In addition to describing the methods (derived from the physiological laboratory) by which he investigates fatigue he gives practical directions on such matters as the optimum weight of tools and the best attitudes of the body for particular kinds of work. The book includes the result of his investigations of the scientific principles involved in the construction of artificial limbs. By means of his dynamographic gangway he is able to register all the phases of support and propulsion, the locomotive efforts, and the duration of the elements of activity of the two legs, the normal and the artificial. With the respiration gauge he measures the expenditure involved by walking a given distance with the model under examination, and by these two means is enabled to appraise the relative value of the various makes of artificial legs. The well-known Canet mechanical arm was constructed as the result of investigations carried out under the direction of Dr. Amar. Descriptions are given of several forms of registering apparatus used for the physical re-education of men with arm stumps.

JOURNALS.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. October, 1918. 35 cents.—Of the five original articles in this number two are devoted to psychic aspects of tuberculosis, three to treatment by artificial pneumothorax. The paper by Dr. Charles L. Minor on "The Psychological Handling of the Tuberculous Patient" is a well written essay on tact and optimism, tempered by judgment, in the treatment of the consumptive. The author illuminates observations perilously akin to platitudes by his facile and sympathetic style. In a paper by Dr. Tohru Ishigami on "The Influence of Psychic Acts on the Progress of Pulmonary Tuberculosis" the opsonic index is used as a guide, and its fall, as a sequel to psychic factors, is taken as evidence of their ill effects. More convincing is the author's observation that psychic acts often cause transient glycosuria. He has found that both sugar and adrenalin inhibit opsonic reaction. His conclusion, based on valuable and evidently laborious research work, that mental overstrain in youth contributes largely to the mortality from tuberculosis will be endorsed by many. The three papers on artificial pneumothorax, by Dr. E. Morris, Dr. S. A. Slater, and Dr. H. F. Gammons, are typical of the mature and deliberate verdict which most American specialists in tuberculosis give in favour of this treatment. The first of these papers deals with as many as 202 cases. The second records a case in which this treatment proved beneficial during pregnancy and labour. The third is a plea for artificial pneumothorax in acute tuberculous pneumonia, a case being recorded in full to point the author's argument.

¹ THE LANCET, 1917, I., 615.

New Inventions.

A BED FOR FRACTURES AND GENERAL HOSPITAL PURPOSES.

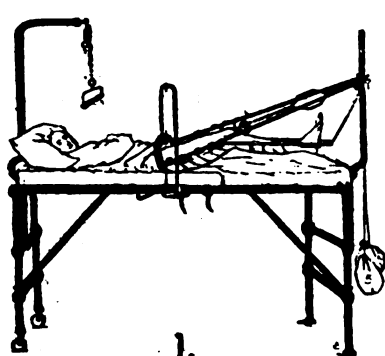
THE bedstead shown in the accompanying illustrations, devised originally for the treatment of gunshot wounds of the femur, has now been modified so as to adapt it for general hospital purposes. In an earlier improvised form it was used in the South African and other hospitals in France during 1917 and 1918; when officially adopted by the War Office for the special femur hospitals in England it was thought that it would be both more economical and more satisfactory to have it manufactured *de novo* for the purpose and at the same time to extend its utility. In its new form it greatly eases the nursing of all fractures, spinal injuries, paralytic cases, wounds of the back—in fact, of all cases, medical and surgical, where lifting or rolling the patient is difficult.

buttock, so that the wound can be irrigated without lifting the patient or wetting the bedding. Other nursing processes are equally facilitated, and for radiographic purposes one has the great advantage of being able to place the X ray tube below the limb and the screen above with no wire mattress interrupting the view.

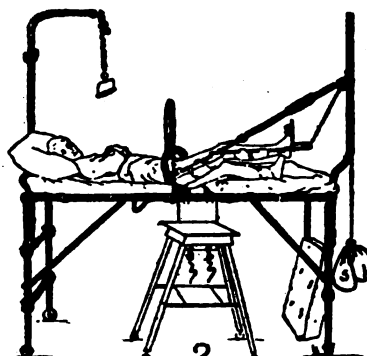
Further to ease matters for the nurse, the canvas sling under the wound has a quick-release device shown in Fig. 5, which does away with the need for undoing buckles each time it is used. The movable section with its quick release can, of course, be placed at any part of the bed according to the nature of the wound.

Each bed has with it a supply of tubular fittings and clamps of Maddox type, fastening on to the foot and head of the bed, and adaptable to almost any form of extension or suspension of the limbs, in wide abduction if required, and with or without pulleys. The derrick at the head of the bed and the cranked extension posts at the foot are interchangeable; all are hexagonal at their bases and fit into hexagonal cups.

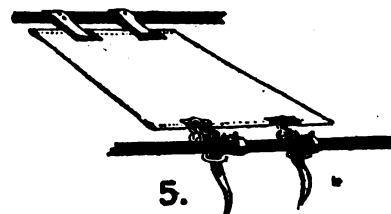
The feet at the top of the bed have large wooden castors; those at the other end are not wheeled but are telescopic, so that the foot of the bed can be raised anything up to 12 inches without the aid of blocks—as, for instance where body-weight counter extension is required.



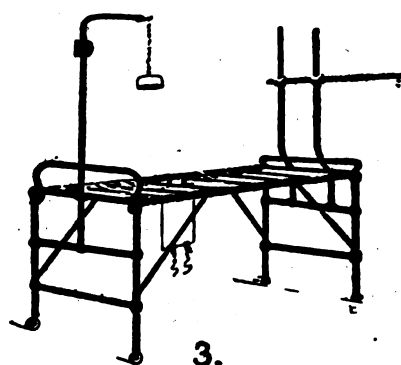
1. Bed arranged as for fractured femur with caliper extension.



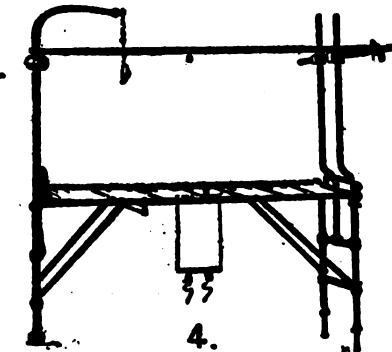
2. The same as Fig. 1, with section let down as for dressing.



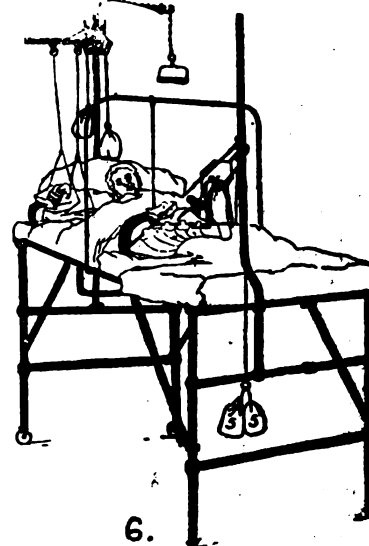
5. Showing a canvas sling with quick-release attachment.



3. Bedstead stripped, arranged as for wide abduction of right leg.



4. The same as Fig. 3, but with overhead suspension equivalent to Balkan beam, and with lower end of bed elevated by means of the telescopic legs.



6. Showing bed arranged as for fracture of right leg and right arm.

Description of the bedstead.—The most evident feature is its height—1 yard—considerably higher than any existing hospital bedstead. At first glance this looks inconveniently high, but after many trials of both higher and lower, experience has shown that this is none too high. Many have been in use during the last year, and the unanimous opinion of nurses, even short nurses, is that the present height of 36 inches is the one that suits them best, and that it saves them a great deal of fatigue in dressing and washing the patient.

The essential feature, however, is not the height but the sectional nature of the whole top of the bed.

The usual spring mattress is replaced by seven transverse slings fastened to one side-bar by flat iron hooks, and to the other by straps and buckles, by which they can always be kept tight. These canvas slings are 11 inches wide, meet edge to edge, and are kept free from wrinkles and quite flat by a strip of metal sewn into each end.

The mattresses which rest on top of them are also sectional, but it is not necessary to have so many; for all ordinary cases we use only one small sectional mattress 11 inches wide, the rest of the bed being covered by two Army "blecuit" mattresses.

For instance, in a femur case the small mattress is put exactly on top of the canvas sling which lies under the thigh, immediately distal to the ring of the Thomas's splint. When dressings are to be done the small mattress and its corresponding canvas are released and dropped, giving free and unimpeded access to the back of the thigh or

Advantages of the bedstead.—To summarise, the chief advantages claimed are:—

1. Nursing and dressing processes made much quicker and easier for the nurse and much less painful for the patient.
2. The patient, bed, and suspension apparatus all together form one self-contained unit, freely movable into the open air if desired as in fire emergencies.
3. No attachments to floor or ceiling, no structural alterations in buildings in order to get overhead suspension.
4. Adaptability to general surgical and medical purposes.
5. The greatest advantage by far is undoubtedly the fact that the patient need never be lifted or moved at all, even for buttock or rectal wounds.

Because of its height the bed is not suitable for convalescent patients who get in and out of bed with difficulty.

I am much indebted to a War Office committee for helpful suggestions regarding the overhead suspension apparatus. The bedstead here described is a War Office issue and is made by Messrs. Whitfields, Ltd., Birmingham.

MAURICE G. PHARSON, M.B., B.Sc. Lond.,
F.R.C.S. Eng.,

Major, S.A.M.C. Officer i/c Femur Ward,
Edmonton Special Military Surgical Hospital.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 15, 1919.

Medicine, Parliament, and Public.

THE KING'S Speech to Parliament was a dignified yet buoyant recognition that a new era has dawned for the world, while it contained splendid assurances that the aspirations in this country for a better social order will be encouraged by prompt and comprehensive action. Among these assurances the following are second to none in importance:—

"We must stop," he said, "at no sacrifice of interest or prejudice to stamp out unmerited poverty, to diminish unemployment and mitigate its sufferings, to provide decent homes, to improve the nation's health, and to raise the standard of well-being throughout the community. . . . You will be asked to approve a Bill for the creation of a new Ministry to deal with public health, with a view to the establishment throughout the land of a scientific and enlightened health organisation to combat disease and to conserve the vigour of the race."

In direct reply to the speech from the Throne, Dr. CHRISTOPHER ADDISON, President of the Local Government Board, intimated that at an early date he would introduce Bills (1) to establish a Ministry of Health and a Board of Health in England and Wales and in Scotland respectively, to exercise functions connected with health and local government; and (2) to amend the law relating to the housing of the working classes. That one of the principal measures lying immediately ahead of legislation is the institution of a Ministry of Health medical men, in common with the rest of the country, know, but it is not so certain that the country appreciates that the administrative work in connexion with the new bureau will have to be done by doctors, while no general opinion among doctors obtains, or apparently can be obtained, as to what is the right way for the State to avail itself of medical assistance and advice. There is no consensus of view as to how the medical service of the country can be best utilised, and there is no evidence that the country (loudly as it may acclaim the utterance by politicians of such aphorisms as "You cannot have an A1 country with a C3 population" or "The nation's soundest asset is sound national health") is prepared to set a high value on the medical work which can turn such aphorisms into practical aspirations. And this fact may embarrass the progress of the Ministry of Health Bill, whose first reading is announced for this week.

A letter which will be found on p. 279 of this issue of THE LANCET goes over old ground, but is of considerable interest because of the unhackneyed way in which a big question is dealt with: and it is a big question, for the author is asking to have a value set upon the worth to the community

of its medical service, as a preliminary to urging that proper payment for that service should be made. And he asks the question at a most opportune time. Dr. SPENCE CANDY sums up fairly the unfortunate side of panel practice, and in doing so he shows that the evils displayed are perfectly remediable. The inequalities of earning, the procrastination in payment, and other haphazard features to which he alludes, should all be capable of prompt reform, and it will be the duty of those who lay the foundations of the Ministry of Health to ensure that such defects no longer occur. But their duty will go further than this. They will have to arrange that the whole medical profession of the country, in consolidated and also in detailed manner, is rallied to the task of making the work of the Ministry of Health a national blessing. And they will have to see that, while interpreting the desire of the nation to be made healthy under a Ministry of Health, there is allotted to medical men a responsible share in the work under conditions that are consonant with the position of a learned profession, as well as with the material needs of men who have lain down under much exploitation and who seem everlastingly unable to arrive at common conclusions. How can we obtain an opinion from the medical profession which shall receive such support that the Government, in the planning of the new work, may be sure of our professional coöperation? We know from the public pronouncement made by Dr. ADDISON, then Minister of Reconstruction and now President of the Local Government Board, at a public meeting of the medical profession held in October last, that the Ministry of Health Bill has no lineage derived directly from the medical profession. It is intended to be an assortment of different departmental responsibilities in health matters. What we want to know further is the assortment of responsibilities, opportunities, and returns which has been designed to fit the medical profession as a whole. We need not recapitulate the circumstances which have called for a coördinate arrangement of the duties discharged by six or seven State Departments. All this is familiar to our readers; what we want to know is, how the medical profession—the general practitioner, the consultant, the specialist, and the pathologist, the consulting-room, the laboratory, and the institution—can be fitted into the picture. Assuming that a complete regimented State Service is not and cannot be intended, at any rate for the present, there remain several schemes before the profession which have many points in common. Two of these, as well as the scheme emanating from the British Medical Association, have been published at length, one by Major J. F. GORDON DILL, senior physician to the Sussex County Hospital, and one by Major-General Sir BERTRAND DAWSON. Major DILL's scheme is for the establishment of a State Service of Medicine alongside of which there would run all opportunities for private practice with some openings for personal initiative and for success in accordance with special characteristics or with the display of individual talents. Under his scheme the detailed

work of any new medical bureau would be discharged by medical men where medical details touched the life of the people. In other directions Sir BERTRAND DAWSON's scheme is full of valuable promise, for it would give scope for centralising, around county hospitals as a focus, the clinical and scientific practice of all large centres of population in the country. Thus immediately the general practitioner would be brought into touch with the specialist and the pathologist, while the officials of the new Ministry of Health would enter upon a real union with their unofficial professional brethren. We want now a common expression of opinion upon these and analogous schemes, so that progress may be made along accepted lines.

But how difficult this is to arrive at we see on every side. The Ministry of Health will affirm the principle of a State Service of Medicine by taking over the work of the National Insurance Commission, which has for its charge the care in sickness of some 14 million subscribers; and which provides work of the most strenuous sort for a large proportion of the effective medical profession upon terms that are not satisfactory to many of those who have to do the work. Some appear to be perfectly satisfied with the existing conditions, some wish to have them reformed in certain definite directions, and to some panel practice is a deadly sin. Again, to nationalise the hospitals is for some the beginning of reform, and to others simply anathema. These are not easy circumstances in which to arrive at a consensus of opinion. For our part, we hold that professional differences have been exaggerated. We do not believe that there need be irreconcilables, but we are certain that there will be unless the general plan of the Ministry of Health is laid down with anxious regard as to what is due to the medical profession. For we must be the executive of the Act, whatever Act emerges. We know that in the existing Bill provision is made for the institution of Consultative Councils, and if the functions of these Councils are well defined—in other words, if the personnels are carefully chosen—and if the public is made immediately and clearly aware of the reasons which determine State action on medical grounds, these Councils will be a power for good; but it is absolutely necessary that the Councils should themselves be able to ascertain the views of the medical profession as a whole, and the reasons of general justice and particular wisdom on which they are based. Dr. ADDISON, at a dinner given by the Medical Parliamentary Committee to the medical Members of Parliament on Wednesday last, declared his intention of making these Councils "*bond-fide* bodies, real and hard working," and it is the aspiration of the Medical Parliamentary Committee to place the medical profession in close touch alike with the work of the Consultative Councils and with the medical Members of Parliament. At the same dinner a statement of the aims before the Medical Parliamentary Committee was made, showing its wide constitution and affirming its hope that from a scheme, which it is preparing for submission to the medical profession, a representative body may emerge, neither committed to the support of, nor inimical to, any professional sections, but rather striving to provide a Round Table at which these sections can thrash out their differences.

Annotations.

"We quid nimis."

THE DEVELOPMENT OF POST-GRADUATE FACILITIES.

WE announced recently that the Inter-Allied Fellowship of Medicine had arranged with different medical schools in London for emergency post-graduate courses to which men from the services, the Dominions, United States, and our Allies would be welcomed. We remind our readers that tickets for the course, at the rate of £3 10s. for each month, can now be obtained from the secretary of the Fellowship at the House of the Royal Society of Medicine, to which the Fellowship has been given access.

Alongside of this development of post-graduate activity the usual post-graduate courses in London will soon commence, and the course in connexion with the West London Hospital, Hammersmith, is now announced. A special eight weeks' course will be held at this hospital, beginning on Monday next, Feb. 17th. The fee for the course is 5 guineas, and in return the subscribers can attend clinics during the afternoons of five days of the week, including a venereal diseases clinic, and can also be present at operations and at demonstrations in the wards. Classes in all the usual medical and surgical specialties will be arranged in accordance with the entrances, and in return for special fees. Further particulars of the course will be found in our weekly diary.

Our Edinburgh Correspondent sends us the following information with regard to post-graduate teaching in Edinburgh, so that in the Scottish capital a similar determination to develop the post-graduate side of instruction has been arrived at.

The Executive Committee of the Edinburgh Post-Graduate Courses have resumed their activities, which have been suspended since 1914 owing to a large proportion of the teachers having been engaged in war work. In reorganising the courses the committee have kept in mind the need for meeting the immediate requirements of graduates who have for some years been out of touch with civilian practice, particularly of those who proceeded to work in the services as soon as they had obtained their degrees. Many of these men, before entering upon the careers they had proposed to follow but for the war, will desire to revive the knowledge of those branches of practice which have been in abeyance while they have been engaged with the Navy or the Army. To meet this demand the committee have arranged to hold during each academic term a course in clinical medicine and a course in clinical surgery, and during the months of August and September a course in obstetrics, gynaecology, and child-welfare. The instruction will be largely practical, the members of the courses taking part in the clinical work in the wards of the Royal Infirmary, Royal Hospital for Sick Children, Royal Maternity Hospital, and of other institutions. Arrangements have also been made by which practical work will be conducted in the anatomical, physiological, pathological, and bacteriological departments. A series of lecture-demonstrations will be held in each subject in addition. The classes are open to women graduates. The courses are conducted under the aegis of the University and the Royal Colleges. Mr. Alexander Miles, F.R.C.S., is acting as interim honorary secretary.

We learn also from our Paris Correspondent that courses of study are being arranged by the Faculty of Medicine in Paris specially designed for doctors and students of Allied and neutral countries. Professor F. de Lapersonne will conduct a course of ten lessons on Orbito-ocular Surgery, limited to 30 students, in the Amphithéâtre Dupuytren (Hôtel-Dieu), on Tuesdays, Thursdays, and Saturdays, at 4 P.M., beginning March 11th. On May 6th will commence a finishing course in Ophthalmology, including clinical, operative, and pathological work,

conducted by Professor Lapersonne, with the assistance of Professor Terrien and Dr. Velter, director of the laboratory. The fee for the first course is 50 francs and for the second 100 francs, and at the conclusion of each a certificate is granted.

NEW HUNTERIANA.

Professor A. Keith, in his recent Hunterian lectures on "Phases in the Life and Work of John Hunter," has undoubtedly succeeded in throwing a flood of light on the early life of the great surgeon, whom he compares to Shakespeare, Newton, and Aristotle. John Hunter was one of the world's outstanding geniuses, and research such as Professor Keith's continues to add to his lustre. Yet despite all this, in many particulars John Hunter's personality remains dim to us, and even when new facts come to light we are often left wondering how he looked and acted among contemporaries. Thus a new glimpse of Hunter afforded in the second series of the William Hickey Memoirs, recently published, leaves us with but a shadowy impression. Mr. Hickey, that delightful *bon vivant*, got very tipsy, as was his wont, at the house of his ultra-hospitable friend, Mr. Crane, of Margate, in or about the year 1780. He played cards with his friends, but went to doze off the fumes of wine in front of a roaring fire. He awoke in excruciating pain and was found to be suffering from a burnt foot. The burn had gone clean through a thick "wax leather" boot. The Margate surgeon, who was at once sent for, prophesied life-long lameness for poor Mr. Hickey on the ground that some of the large vessels of the foot appeared "materially hurt." Mr. Robin Adair was then summoned in consultation from London, but as he was out of town and Mr. John Hunter had "undertaken to act" during his absence the latter came down to Margate. "After meeting the Margate surgeon and inspecting my foot," says Hickey, Hunter "at once declared no ill-consequences would arise, and that a few days' quiet, keeping my leg in a horizontal position, and frequently applying an embrocation which he ordered, would completely cure the hurt, and so it proved." It is a pity that the garrulous Hickey, who has recorded such vivid impressions of nabobs and others once famous, should have left us so much in the dark as to details of John Hunter's manner, mode of address, speech, and so forth.

We gain no clearer picture from Peter Pindar, who in 1788 echoed the public's dislike of scientific discovery in some mordant lines descriptive of various leaders of the Royal Society. The satire in which the lines occur is the well-known "Peter's Prophecy: or, the President and Poet." It takes the form of a dialogue, with notes, between Sir Joseph Banks and Peter Pindar (Dr. John Wolcot):—

Sir Joseph:

Hunter with fish intrigues our House regales—

Peter:

The tender history of cooing whales!

Sir Joseph:

Great in the noble art of gelding sows!—

Peter:

And giving to the boar a barren spouse!
Who proves, what many unbelievers shocks,
That age converts hen partridges to cocks!
And why not, since it is deny'd by no man
That age hath made John Hunter an OLD WOMAN?
Believe me, full as well might Papists bring
Quills from a Seraph's tail, or Cherub's wing:

Or bones from Catacombs to form new saints,
To cure, like all quack medicines, all complaints!
Such might the journals of the House record,
As well as Hunter's wondrous cock-hen bird!

Dr. Wolcot, the son and grandson of surgeons, and himself for many years a practising physician at Truro, previously to which period he had been Physician-General to the forces in Jamaica, was well acquainted with the movements of science. Hence his rage against John Hunter must be attributed to political bias and to his violent dislike of authority, especially as embodied in the Royal Society and Royal Academy, which latter corporation in his capacity as art critic he also skitted mercilessly. But we could wish that Peter Pindar had left us a portrait of Hunter as a man similar to his comic satiric impressions of the personalities of George III. or Banks. The King, according to Hazlitt, greatly enjoyed Pindar's terrible attentions and even proposed to pension him! Hunter's rugged sense of humour should have appealed to Pindar at all times, but Pindar refuses to describe him. There is, indeed, in Hunter's case the same careless or unpremeditated conspiracy of silence of which we complain in that of Shakespeare. Of John Hunter, Matthew Arnold might have sung, as he did of Shakespeare:—

"Others abide our question. Thou art free.
We ask and ask—Thou smilest and art still,
Out-topping knowledge."

We look in vain in Mrs. Chapone's, Mrs. Montagu's, or Horace Walpole's letters, or in Boswell's pages, for a pen-portrait of John Hunter or even for an allusion to him, and, finding none, we are driven to conclude that for the majority of the diarists and chronographers of his day he stood "on earth unguess'd at."

THE PHYSICS OF SHOCK.

PHYSIOLOGISTS are apt to complain that their teaching takes a generation to percolate down to actual medical practice, or, in other words, that little or no use is made of experimental research until the students to whom it is imparted become the well-established medical practitioner. Some lag is inevitable, but the complaint in its extreme form is already out of date, for the physicist is already having the chief say in one of the most frequent and urgent circulatory disorders—namely, secondary shock. The discussion at the Royal Society of Medicine, of which we give a full report on another page, leaves barely a doubt that the most important factor in the shock which follows severe injury or surgical operation is not exhaustion of nerve centres, suprarenal deficiency, inefficient cardiac contraction, or acidosis—is not even loss of vascular tone, although any or all of these things may play their part: it is simply the small volume of fluid in effective circulation. The vascular tree is underfilled and oxygen no longer is distributed to the tissues in proper quantity. Granted this postulate, the corollary at once follows that some means is required of bringing up the volume again to the required level. Warm physiological saline solution may be used, but in half an hour it has passed through the capillary walls, and the condition is the same as it was. Thus far the surgeon. The physicist then whispered to him: "I can tell you of a fluid which, if you put it inside a vein, will not come out again. Try a solution of some colloid with molecules so big that the capillaries will not let them through their walls." Gelatine was first tried and given up on the purely accidental ground that, prepared as it commonly is from calves' feet, it was apt to contain tetanus spores. The physicist then suggested gum, a substance

easy to obtain and to sterilise, adding that in 6 per cent. solution gum not only possessed the same viscosity as blood but also the same osmotic pressure, or, in other words, this gummy solution introduced into a vein neither impedes the circulation nor has any tendency to leave the vessels. Clinical evidence has now abundantly confirmed the fact that three-quarters of a litre of a 6 per cent. solution of pure gum arabic injected at body temperature into a vein is far and away the most potent agent in dealing with secondary shock. Its use is not necessarily confined to surgical cases. We have just received from Sir Leonard Rogers the text of his presidential address delivered last month before the Indian Science Congress at Bombay. Since 1895 he has sought to overcome the collapse stage in cholera by injecting various fluids. Beginning with normal saline subcutaneously and per rectum, he went on to give the same fluid intravenously, he then increased the percentage of salt, and finally added permanganate and alkali to the hypertonic salt solution. In so doing the proportion of recovery rose at each stage, starting from 41 per cent. and going on through 49, 67, and 74 to the high figure of 81 per cent. in the period 1915 to 1917. We can hardly be wrong in expressing the hope that here also a gummy solution may attain even better results. The whole literature of the subject may be found in Professor W. M. Bayliss's Oliver Sharpey Lectures recently published¹ in book form.

WHISKY AND WATER.

SOME years ago there was considerable discussion as to what constituted the injurious secondary products in potable spirits in general, and in whisky in particular. The popular notion used to be that fusel oil was a source of headache from whisky drinking. Chemists improved the occasion by suggesting that amongst the toxic products occurring in malt whisky were aldehydes, certain oils, and bases more or less eliminated by maturing. The order of the Liquor Control Board to the effect that no whisky is allowed to be sold at a greater strength than 30° under proof seems to have suggested a new light on the question. Whisky was formerly supplied at a strength of about 17° under proof (approximately 48 per cent. by volume of alcohol), whereas at 30° under proof the alcoholic strength by volume is about 40 per cent. Grain spirit stands this dilution without turning appreciably opalescent, but malt whiskies and blends get turbid, and so filtering has to be resorted to before bottling the spirit. This turbidity is due to certain oils and other substances derived from the malt in distillation, which are soluble in the old strength of spirit, but insoluble in that now supplied. There are, therefore, absent in whisky as it is now provided certain bodies removed by dilution and filtration which were present in the pre-war spirit. The outcome is that the whisky of to-day keeps bright in the glass on dilution with water, with results, it is probable, that are all the better for the consumer. The interesting question remains, What is the nature of the constituents causing the opalescence produced by dilution and removed on filtration? The present circumstances offer opportunity for determining this point, for there must be an accumulation of this material in

the filters used by the whisky dealers. Those who are interested in the chemistry of whisky might well investigate the question with a view of throwing a light on the nature of these materials and of determining their physiological action. Such an inquiry might settle old vexed questions as to the toxic bodies in whisky, other than alcohol. Diluted whisky, subsequently filtered from the opalescence which forms, is thought to be more wholesome (if that word can be applied to the drinking of spirits at all); this belief may find scientific explanation when the substances which cause this opalescence have been investigated. Or does the fact that less alcohol is being consumed in the whisky of to-day account by itself for the increased wholesomeness?

SOCIAL EVENINGS AT THE ROYAL SOCIETY OF MEDICINE.

IN spite of the unfriendly meteorological conditions and the failure of transport facilities, the first social evening held at the house of the Royal Society of Medicine on Wednesday, Feb. 5th, was the unqualified success of a function attended only by those who wanted to be there. Sir John Bland-Sutton gave the discourse on Gizzards which we printed last week, and he afterwards demonstrated specimens with much humorous detail. The Library was open for informal discussions, and a number of Dominion medical officers were present. During the evening two noteworthy cinema films were thrown on the screen, the first showing the circulation as a going concern, the corpuscles traversing the capillary network in the frog's lung being specially effective. The second film depicted every stage in the inoculation of a rabbit with the *Spirochæta pallida* and the cure with salvarsan injection. The spirochætes were well seen in movement on the screen under dark-ground illumination.

An attractive series of discourses is announced on successive Wednesdays at 8.30 p.m. at the Social Evenings. Sir Arbuthnot Lane took Stasis as his subject this week. Next week Dr. Norman Moore will deal with English Morbid Anatomists. In the weeks that follow Sir William Osler will discourse on Sir Thomas Browne, Dr. Henry Head on Disease and Diagnosis, Mr. W. G. Spencer on Larrey and War Surgery. A cordial invitation to attend these Social Evenings is extended to medical officers of the various services, and especially to those from the Dominions, the United States, and Allied countries temporarily in this country.

WORDS CAUSING PHYSICAL INJURY.

JUDGMENT was delivered recently by Mr. Justice Avory in the case of Janvier v. Sweeney and Barker. The plaintiff, a Frenchwoman, claimed damages for nervous shock and injury to her health caused by certain statements made to her by the defendant Barker, assistant to the defendant Sweeney, a private inquiry agent. The plaintiff's case was that Barker, in order to obtain through her intervention certain letters written by a deceased officer to a lady living where Miss Janvier resided, told the latter that he was a police officer and that she had been corresponding with a German spy, and that the fright and agitation resulting from this accusation had made her ill. The jury, in answer to questions put to them, found that Barker had used the words imputed to him, that they were calculated to

¹ Intravenous Injection in Wound Shock. London: Longmans, Green and Co. 1918. Pp. 172. 9s.

cause physical injury to the plaintiff, that they were made maliciously, and that the plaintiff had been made ill by them. Damages of £250 were awarded. Argument took place as to whether as a matter of law words, even when causing physical injury, could be actionable, except in the case of defamation, and whether there was evidence justifying the jury in finding that the injury suffered by the plaintiff was the result of the statements above referred to. Mr. Justice Avory held with regard to the first point that false statements, if they cause physical harm, afford ground for an action at law in respect of such harm, and gave judgment in her favour against both defendants for the damages above mentioned. In view of an appeal a stay of execution was granted.

LARYNGO-FISSURE AND CANCER OF THE LARYNX.

THE history of the operation of laryngo-fissure is interesting. Originally suggested by Desault in 1812, it was performed for the first time by Brauers, of Louvain, in 1833, for a papillomatous growth. This operation was carried out without an anæsthetic, without a preliminary tracheotomy, and before the days of laryngoscopy—a bold and brilliant performance. The first record of a laryngo-fissure for a malignant growth, and with the protection of a tracheotomy, is that of Gordon Buck, of New York, in 1851. But for the eradication of cancer it failed at first to succeed. In his first 8 cases even a great surgeon like Billroth had 6 recurrences. Morell Mackenzie condemned it. Paul Bruns recorded 19 cases, of which only 2 survived a year, and concluded, in 1878, that "the attempt at radical extirpation of cancer by means of thyrotomy had proved itself completely unsatisfactory and worthless." A curious and interesting part of the history of this operation is that three of the pioneers in establishing it were at first very hopeless about it. In 1883 Butlin wrote that "the disease is far too deeply seated to admit of removal by so slight an operation"; as late as 1886—only 33 years ago—Semon formed the opinion that it should not be attempted; and Moure (of Bordeaux) concluded that thyrotomy appeared a bad operation in established laryngeal cancer. This was in 1891, and yet, before the century finished, laryngo-fissure had given results which rivalled those for cancer in any other part of the body. Professor Schmiegelow of Copenhagen (another of the pioneers of this subject), stated in our columns on August 1st, 1914, that "the whole of our present knowledge of the diagnosis and treatment of this disease is founded on the work of Semon and Butlin, who, towards the end of the last century, entirely revolutionised our views with regard to the malignancy of intralaryngeal cancer."

How well this revolution has been consolidated can be seen by reference to the paper on Intrinsic Cancer of the Larynx read at the Medical Society of London (see p. 263) by Sir StClair Thomson. He produces evidence to confirm his conclusion that if patients applied early with epithelioma limited to a vocal cord and are operated on by laryngo-fissure, then the death-rate should be nil, the restoration of voice satisfactory, and the cure lasting. This remarkable change in 30 years has been achieved by improved skill in early diagnosis, and increased perfection in surgical technique, and both of these are the result of such cases being handled by expert laryngologists. Further, the study of Sir StClair Thomson's account of his cases suggests that from

such work we obtain help in elucidating the wide subject of the whole etiology of cancer. Recurrences are dealt with. A cancer may appear in the same side of the larynx 5 to 15 years after a laryngo-fissure. Or that side of the larynx may remain healthy and an epithelioma may start in the opposite cord 13 years later. Or it may show on the opposite side of the tongue 3 years later. Or the larynx may remain quite free from disease and yet the patient may die from cancer of the stomach 8 years after a laryngo-fissure, or from cancer of the rectum 18 years after a successful operation for the same disease in the larynx. Can these be called "recurrences"? Are these not entirely fresh new growths? What is their connexion, if any, with the original vocal cord cancer? What is this tendency to cancer? These histories should stimulate our scientific imagination to new researches. Anyhow, the operation of laryngo-fissure for intrinsic cancer of the larynx, which was condemned by some of its own pioneers 33 years ago, has since achieved such successes that, as Chevalier Jackson says, "nowhere in the whole realm of the surgery of malignant diseases have such results been obtained."

THE COLLEGE OF AMBULANCE AND THE FUTURE OF THE V.A.D.

LAST year¹ we endorsed the appeal of Sir Rickman Godlee and Sir James Cantlie, the President and Principal respectively of the College of Ambulance, Vere-street, W., for funds in order that the College might have an assured income and be enabled to carry out in peace-time the immeasurably useful work which it has done during the war. As we then pointed out, there are many ways in which the College can help to preserve human life. One of these ways was admirably demonstrated on Saturday last, when the County Director, Lieutenant-Colonel J. F. Badeley, paid an official visit of inspection to the College. Sir James Cantlie gave a demonstration—in reality a repetition on an enlarged scale of that which was given in May last²—illustrating the means by which improvised methods of first-aid might be successfully applied to accidents on the farm. The keynote of the method was simplicity and the adaptation of materials at hand for stretchers, splints, and dressings. Colonel Badeley said that up to Dec. 1st, 1918, there were 1168 Red Cross hospitals and 245 hospitals under the control of the Order of St. John. The Voluntary Aid Detachments controlled by these two organisations numbered 3138 and 985 respectively, the total personnel being nearly 300,000. Although the Red Cross Society had accomplished the work for which it had been called into existence, it would be impossible to revert to a pre-war footing. In addition, the voluntary workers desired in some way to continue their services to the country for which they had been trained. For this purpose he suggested that the charter of the British Red Cross Society should be enlarged in such a way that the organisation might undertake welfare work. This, he said, would demand a corps of trained workers, together with a body of part-timers, who would find employment under the various care committees now in existence or about to be formed, and in other ways. Some V.A.D. workers could be trained for the higher technical posts of inspectors of factories, health visitors, &c.; there would be welfare secretaries at headquarters and a secretary

¹ THE LANCET, Dec. 14th, 1918, p. 823.

² THE LANCET, May 26th, 1918, p. 768.

in each borough, who would attend to requisitions from the local workers. The men's V.A.D. might form a brigade to be available for epidemics, accidents, and on ceremonial occasions. Colonel Badeley concluded by stating that the ingenious display which Sir James Cantlie had provided should be seen by everyone throughout the country.

CLINICAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

THE special clinical meeting of the British Medical Association has now been fixed for four days, Tuesday, April 8th, to Friday, 11th, and a provisional programme has been drawn up. The meeting will divide into three sections: medicine, surgery, and preventive medicine with pathology—the three to run concurrently. In the section of medicine, influenza, venereal disease, and prognosis in cardio-vascular affections will be the principal subjects discussed. In the section of surgery, gunshot wounds of the chest, wound shock, and reconstructive surgery take the premier position. Influenza also figures in the section of pathology along with the dysenteries and malaria. Demonstrations in all the three sections cover a wider field and include a time-table of visits to general and special hospitals. The war collection of pathological specimens at the Royal College of Surgeons will be on view daily during the meeting from 10 to 6.

THE FUTURE OF WESTMINSTER HOSPITAL.

WE understand that at a meeting of the Governors of Westminster Hospital next week a resolution will be considered recommending amalgamation with King's College Hospital, the reasonable reservation being added that the name, identity, and traditions of the Westminster Hospital shall be fully and permanently preserved in the combined institution. The resolution, it will be seen, puts in a sentence the result of long negotiations. Eight years ago the principle of removal was adopted at a meeting of the Governors of Westminster Hospital, when under a provisional scheme a site at Clapham came under consideration and was eventually purchased, a proposal for amalgamation with St. George's Hospital having broken down. The altered conditions of finance and labour brought about by the war led, however, to a reconsideration of the intention to migrate to Clapham, with the result that on the one hand many objections were raised to the rebuilding of the institution upon the site at Clapham, while strong arguments were found for amalgamation with King's College Hospital. The main objections to the Clapham scheme are: (1) that the site is not completely ready, inasmuch as various purchases of adjacent properties remain to be made, and (2) that the cost of labour and materials, already excessive, would make it imprudent to expend the greater proportion of the available capital in building a small hospital—for the Clapham project had in view a hospital of only 300 beds. There are, moreover, at Clapham voluntary institutions meeting the urgent needs of the immediate neighbourhood. The arguments in favour of amalgamation with King's College Hospital meet the objections to the Clapham scheme. An amalgamation with King's College Hospital will result in the transformation of two institutions, neither of which is wealthy, into a single first-class modern hospital, and it is agreed on all hands that no new hospital with an attached medical school should be built in the metropolis,

having less than 500 beds. King's College Hospital is already installed in part of its new buildings at Denmark Hill and by amalgamation with Westminster Hospital these buildings can be completed and extended to the full dimensions of a first-rate teaching institution. And perhaps the strongest argument of all in favour of a junction of forces between Westminster Hospital and King's College Hospital is that in this manner a really strong medical school would be secured. The prospects of a medical school attached to Westminster Hospital as an institution of 300 beds on Clapham Common must be regarded as very unfavourable. By joining forces with the medical school of King's College Hospital a large school should soon arise affiliated to a first-class modern institution.

PERFORATION IN CANCER OF THE STOMACH.

WHILE perforation is common in gastric ulcer it is very rare in gastric cancer. Writers give statistics varying from about 25 to 6 per cent. of the cases. In the *American Journal of the Medical Sciences* for January Dr. J. Friedenwald and Dr. A. McGlennan have published an important paper on the subject. In a series of 1000 cases of cancer of the stomach there were only 23 cases with signs of perforation, and in only three of these was perforation demonstrated. The process of ulceration is slow, allowing time for the development of adhesions which wall off the general peritoneal cavity, so that perforation occurs into a protected cavity and a chronic abscess is produced. The following is an example:—

An emaciated negro, aged 53 years, was admitted into hospital with a nodule mass below the right costal margin. He had suffered from nausea and vomiting for three months. To the left of the middle line and above the umbilicus was the scar of an operation, at the lower end of which was a gastric fistula, through which milk was discharged in a curdled state about an hour after ingestion. Carcinoma with perforation of the stomach was diagnosed. After three days the patient died from exhaustion. At the necropsy carcinoma of the pylorus with metastases was found. The fistula passed from the stomach through the cancerous mass to the abdominal wall.

Acute perforation may occur in gastric cancer. The following is an example:—

On August 3rd, 1908, a woman, aged 62 years, sought advice for indigestion of three months' duration. There was nausea, occasional vomiting, and gastric pain not related to the taking of food. A hard mass was felt at the centre of the epigastrium. Operation showed a carcinomatous mass involving the pylorus and nearly half of the body of the stomach. On account of metastases in the mesenteric glands and liver no attempt at excision was made. Gastro-enterostomy was performed. The patient was able to take nourishment better for a time. On Dec. 10th she was seized with intense abdominal pain, which was followed by symptoms of shock—rapid pulse, clammy extremities, and cold perspiration. She died within a few hours. The necropsy showed a large perforation in the middle of the cancerous mass at the pylorus. The gastro-enterostomy opening was patent.

Sir Anthony Bowlby delivers the Hunterian Oration on British Military Surgery in the Time of Hunter and in the Great War at the Royal College of Surgeons of England to-day (Friday), being the anniversary of Hunter's birth.

THE Arris and Gale lectures are to be delivered at the Royal College of Surgeons of England by Mr. Edred M. Corner on Feb. 19th and Mr. E. M. Cowell, Lieutenant-Colonel, R.A.M.C., on Feb. 21st, at 5 P.M. Mr. Corner has chosen as his subject the Nature of Scar Tissue and Painful Amputation Stumps. Mr. Cowell will deal with the Initiation of Wound Shock and its Relation to Surgical Shock.

BIOLOGY AND THE MEDICAL CURRICULUM.

By T. G. HILL,

READER IN PLANT PHYSIOLOGY, UNIVERSITY OF LONDON,
UNIVERSITY COLLEGE.

ALL Honsing bodies wisely require a medical student to pass an elementary test in biology (or botany and zoology), chemistry, and physics before permitting him to take his examination in anatomy, physiology, and pharmacy. For very many years botany has been taught to medical students since, in the past, it has been of direct importance. Zoology was introduced later in order to provide a knowledge of the methods of anatomy and to form an introduction to the detailed anatomical study of the human being.

The direct value of botany for the most part has disappeared at the present time, and, in view of the changes proposed in the teaching of botany to elementary students, the present is a convenient opportunity for raising certain questions regarding the instruction of medical students in biology.

Deficiencies in Organisation and Teaching.

It will be generally conceded that biology has a high educative value and also is the obvious means of providing a preliminary training in the methods and technique which form so important a part in the student's future work. At the present time instruction in botany and zoology is given in the Universities by the staffs of the two departments, so that a medical student attends lectures and practical classes in botany and zoology, the two subjects being, in the majority of cases, uncoordinated. In the larger medical schools, on the other hand, there is usually a lecturer on biology who instructs in both branches of his science; the student at the medical school, therefore, has the advantage, but not infrequently the teacher is under the disadvantage of having fewer facilities for teaching. It is not the present intention, however, to deal with medical schools in particular; but, from wide personal experience as a teacher under both systems, to point out some of the more outstanding deficiencies which obtain in organisation and teaching.

Since medical science is a branch of biology the importance of general biology—not botany and zoology as such, but a general introduction to the knowledge and study of life and an education in the methods of biological work—in the preliminary medical sciences cannot be over-estimated. The exact amount of actual knowledge gained by the student is immaterial provided he thoroughly understands what he knows and is able to apply the principles learned. In a phrase, education rather than mere information. This is, of course, realised; vividly by some, dimly by others, and efforts have been made to bring the more ideal state of affairs into being. For example, in the first examination for medical degrees in the University of London, which replaced the older Preliminary Medical Examination, the syllabus has been much cut down and, instead of separate examinations in botany and zoology, papers are set in general biology. The success of these experiments has not been conspicuous, nor will be until certain reforms are carried out.

Suggested Reforms.

The first reform is that the medical students must have a special course of instruction, not a bowdlerised edition of the instruction given to students in the Faculty of Science. This course must be general biology treated as one subject; it should not be resolved into its components botany and zoology. Clearly this is not possible unless the instruction be given by a professor or a lecturer, with an adequate staff, who must be held entirely responsible. In other words, he must be independent of other departments of biology; he should be of the Faculty of Medicine rather than of the Faculty of Science.

It may be argued that it will prove a very difficult matter to find teachers of any standing to undertake the work and that, nowadays, no biologist has the time to keep abreast of the details of botanical and zoological research, and so on. These are but minor difficulties. When it is understood that there is a high and worthy object in view, the proper people will be forthcoming, provided the terms of appointment are attractive; it is, for example, an anomaly that the lecturer

on biology in a medical school should be paid a much lesser salary than the lecturer in chemistry. Other difficulties would speedily disappear if the right candidate were selected.

The medical student must be taught the principles of biology. Morphology, for example, must be thoroughly understood; this does not necessitate a large selection of types, the average syllabus contains quite as much material as is requisite. Physiology is most important, and every advantage should be taken of plants simply because the main vital functions can be more easily demonstrated with plants than with animals. Further, it is all-important that the study of function should go hand-in-hand with structure. The medical man must in practice always associate function and structure, and the sooner this habit of mind is formed the better. As it is, the relegation of physiology to a weak or so at the end of the course is all but valueless in training.

With regard to practical work, it is to be remembered that in addition to mental education, the education of the hand and the eye is all-important. A high degree of skill in dissection and in the preparation of objects for microscopic examination should be insisted upon. A student should be absolutely at home with the microscope and should be able to use the microtome. All should be able to write a description of a preparation or other object in clear and simple language and illustrated by clear and accurate sketches.

It does not always appear to be realised what parts of the subject are of direct value to the student in his subsequent studies. To take an example: much too little attention is paid to fundamental facts of the anatomy of plants. Sections of stems, roots, and leaves are all very well, but are of no value without a knowledge of the actual tissue elements. The study of macerated material, judging from examination results, would appear to be dying out. I remember being asked by a pathologist, a very highly qualified man, to examine some milk films, as they showed curious bodies which he had never before seen. These bodies were nothing more than lignified vegetable debris—cell walls, protoxylem rings and spirals; in brief, the milk was contaminated from an obvious source.

With respect to physiology, there is reason to suspect that in many cases the apparatus is put up and the experiments performed by a demonstrator. This is quite wrong, students should themselves set up their experiments as far as is possible and should invariably perform them. Further, the reason for all negative or peculiar results should be ascertained. A few carefully selected experiments actually set up and observations made by the students themselves are worth hundreds of demonstrations performed by the teacher. In other words, the teacher should act in an advisory capacity.

It is not infrequently stated that no reform can be made owing to the examination system; if this be so, the sooner the system be reformed the better. Examiners are to ascertain what a candidate knows and what he can do, and whether he has a sufficient equipment to proceed with his studies. If examiners gave more credit for the practical examinations and less for the theoretical a great improvement would very quickly result, especially in a subject like general biology, where the number of possible questions for the written papers, as judged by the published papers, appears to be limited.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Proposal for a Central Health Department.

THE Commission of Hygiene of the Chamber has adopted a report drawn up by Dr. Navarre in favour of the formation of a Ministry of Public Health, under the direction of which would be placed all the health services, both civil and military, of relief and public hygiene. The idea is not a new one, having been advanced by a number of deputies more or less suspect of coveting the post of executive officer. Possible occupants of the post are, indeed, numerous. The present medical staff is not unfavourable to the idea in view of the fact that the various services of hygiene are distributed among all the Ministries, each occupying a subordinate position without right of initiative or liberty of action. At the Ministry of the

Interior there now exists the important directorate of hygiene and of public relief, both these services being under the same administration; and this is a fundamental mistake, for many questions of relief are unconnected with hygiene and are more often closely related to finance and especially, unfortunately, to party politics. The most serious fault of the present system is that it entrusts the carrying out of hygienic measures to the usual agents of the Ministry of the Interior, the mayors and the prefects. The former dare not apply the penalties of the law to infringements committed by their electors in order not to displease them; the prefects are prone to the same indulgence, also for political reasons, while the deputy of the department intervenes in favour of his own faithful electors. I have known the closing of an oyster bed, known to be contaminated by a leaky sewer, deferred so as not to influence the district unfavourably on the eve of an election. So long as hygiene is left to the Ministry of the Interior it will not be applied in the face of the formidable political influence ruling there. The teaching of medicine and of hygiene is in the hands of the Minister of Education, as also are school hygiene and physical culture. Food hygiene and the supervision of the control of qualities of foodstuffs which are injurious to health belong to the Minister of Commerce. International sanitary conventions and the organisation of the struggle against pandemics occurring in different countries are in the domain of the Minister of Foreign Affairs. The question of wines, alcohol, tobacco, where hygiene is involved, the hygiene of the State manufactures, appertains to the Minister of Finance. The hygiene of the railways and the disinfection of carriages belong to the Minister of Public Works. Accidents occurring in industrial life are in the purview of the Minister of Labour. Medical jurisprudence is under the Minister of Justice. Finally, the Minister of War and the Minister of Marine have each their special State service. Obvious inconveniences result from this dispersion of effort. Two of these are: a personnel too numerous and often incompetent; undue delay in the solution of problems which, as often happens, concern many Ministers at the same time. It is this administrative anarchy which it is proposed to end by the creation of a single Ministry to centralise the scattered services, of which the chief alone would retain the right of being consulted when a question of hygiene arose which concerned him. The Ministry of Public Health, when set up, would have the power of carrying out its decisions by its own agents, all recruited from among those who are both competent and well-fitted for their particular mission. Recently a press campaign has been conducted demanding the creation of this new ministry, and suggesting handing over to it as a nucleus the Under-Secretariat of Hygiene created since the war at the Ministry of War. A first indication in this direction lies in the fact that it is this particular Under Secretary who has introduced to the new Chamber the Bill aiming at official organisation of the anti-tuberculosis campaign.

Hygiene and the Frenchman's House as His Castle.

The Council of State has just given an important decision on a hygienic matter in which doubt arose in the interpretation of the law declaring a private house to be inviolable save only to the officers of justice. The Mayor of Toulouse has informed the people under his administration that, for the purpose of forming a sanitary house inventory, officers of the Bureau of Hygiene would attend on all the premises to draw up a survey. He added that all who refused admittance would render themselves liable to summary conviction. Many property owners saw in this demand an attack on the inviolability of the private domicile, and addressed a resolution on the subject to the Council of State. The Council decided that the right of ordering the inspection of property in a commune to determine whether its hygienic arrangements are satisfactory already belongs to the mayor by virtue of the very liberal powers vested in him by the law of Feb. 15th, 1902 (Protection of Public Health). The exercise of such powers would be, however, in many cases rendered nugatory without examination of premises. The establishment of a sanitary inventory does not, in the Council's view, impose any special restraint on private property.

The Recrudescence of Rabies in Paris.

I have already called attention to the increase of rabies among dogs in Paris. This increase has now become

alarming, and M. Martel, chief veterinary surgeon to the Prefecture of the Seine, has pointed out to the Academy the grave danger which threatens. In the Paris area 411 cases of rabies were reported in 1918, and 61 during the first 25 days of the month of January just past; compare this with the 3 or 4 cases per annum with which we had to reckon in 1913 and 1914. 350 bitten people have attended the Pasteur Institute, and several deaths have occurred, three of which are recent. Stray dogs without leash or muzzle are numerous in Paris. The disease is thought to have been carried by dogs abandoned by their masters in the war zone, and by others which have escaped from the camps established near Paris to test the effect of the new asphyxiating gases. M. Martel demands the application of strict police measures: all dogs should be numbered, registered, and obliged to wear a collar with a medal attached certifying that the tax has been paid by their owners; in addition, they should all be muzzled. Stray dogs should be ruthlessly collected by police agents and brought to the special dépôt (*La Fourrière*) to be destroyed if not claimed within a week.

Feb. 10th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Reform for Ireland.

THE dilatoriness of the Government in putting forward any scheme of health reform for Ireland parallel with the Ministry of Health Bill for Great Britain is causing energetic protest on the part of the various medical corporations and organisations in Ireland. The need for reform is admitted on all sides, lay and medical, and, indeed is far more urgent in Ireland than in England, inasmuch as Ireland has had little or no part in the sanitary progress of the last 50 years. Ireland still stands where England was a generation ago. It is held here, not only in medical circles, that the mere application of the English Ministry of Health Bill to Ireland, or even the establishment of a special Ministry of Health for Ireland, would be of little avail. Conditions are so backward that thoroughgoing medical reform must go hand-in-hand with the establishment of a Ministry of Health. The reform must include the unification of the Poor-law Medical Services and the medical services given under the National Health Insurance Acts, the establishment of medical inspection of schools, the provision of medical and dental treatment of school children, the reform of the entire hospital system, the development of a thorough sanitary system, and the endowment of medical research. Such a scheme of reform should constitute an important part of the work of national reconstruction. In this connexion it is interesting to note that both the Irish Reconstruction Association, under the presidency of Sir Horace Plunkett, and the new Centre Party, have appointed special committees to report on the problem of health reform, while the latter organisation has adopted health and housing reform as one of "the planks of its platform." Medical opinion in the country is also taking steps to make itself felt. The Royal College of Physicians of Ireland has had the matter under consideration, and at its last meeting decided to invite the other medical corporations and the various voluntary medical organisations in the country to unite in a joint deputation to the Chief Secretary, if he should be willing to receive it, in order to persuade him of the urgency of the problem of health reform in its bearing on the welfare and happiness of Ireland.

Sir William Whitla, M.P.

Sir William Whitla has resigned his position as senior physician to the Royal Victoria Hospital, Belfast, and, having been thanked for his services, has been placed on the consulting staff. He is also about to give up the chair of materia medica at the Belfast University, a professorship held by him since the year 1890.

The Royal Victoria Hospital, Belfast.

At the usual bi-monthly meeting of the Board of Management of the Royal Victoria Hospital, Belfast, held on Feb. 5th, a communication was received to the effect that Mr. Evelyn Cecil, Secretary-General of the Chapter of St. John of Jerusalem, would present to the hospital the

pathological equipment of the splendid laboratory attached to the well-known St. John's Hospital at Etaples, a base institution which was bombed by the Germans, and which was afterwards transferred to Trouville. Fortunately, at the time of the German vandalism the fittings of the pathological laboratory escaped. In addition to the laboratory equipment, a quantity of dressings are also included in the gift, which is made in recognition of the services of Major Thomas Houston, O.B.E. (in charge of the laboratory), Dr. John MacIlwaine, Dr. W. McCloy, Dr. Foster Coates, and Dr. W. Wilson, all old members of the Belfast Medical School, who were attached to the hospital at Etaples during the war. This magnificent gift was gladly accepted, and the board of management passed a resolution of special thanks. The pathological outfit (such articles are very hard to get at present) will be of the greatest advantage to the medical school, and the Government are arranging to send a special ship from France to Belfast with all the articles on board.

Feb. 10th.

URBAN VITAL STATISTICS.

(Week ended Feb. 1st, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had declined from 16.1 to 15.0 per 1000 in the four preceding weeks, rose to 17.2 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 18.9, or 2.8 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 5.0 in Barrow-in-Furness, 7.8 in Wimbeldon, and 9.0 in Witley, to 29.8 in Sunderland, 30.3 in West Hartlepool, and 31.4 in Wigan. The principal epidemic diseases caused 158 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 53 from infantile diarrhoea, 48 from diphtheria, 27 from whooping-cough, 15 from measles, 9 from scarlet fever, and 6 from enteric fever. Whooping-cough caused a death-rate of 1.0 in Rhondda and 1.1 in Sunderland, and diphtheria of 1.4 in Bolton. The deaths from influenza, which had declined from 755 to 224 in the 12 preceding weeks, rose to 272, and included 15 in London, 29 in Liverpool, 11 in Newcastle-on-Tyne, 10 in Sunderland, and 9 in Manchester and in Leeds. There were 7 cases of small-pox, 105 of scarlet fever, and 117 of diphtheria under treatment in the Metropolitan Asylums Board Hospitals and the London Fever Hospital, against 6, 1057, and 1174 respectively at the end of the previous week. The causes of 57 deaths in the 96 towns were uncertified, of which 13 were registered in Liverpool, 8 in Birmingham, 5 in Manchester, and 4 in Sunderland.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality was 18.4, against 17.0 and 18.1 per 1000 in the two preceding weeks. The 362 deaths in Glasgow corresponded to an annual rate of 16.9 per 1000, and included 12 from whooping-cough, 4 from diphtheria, 2 each from measles and infantile diarrhoea, and 1 from scarlet fever. The 138 deaths in Edinburgh were equal to an annual rate of 21.4 per 1000, and included 7 from whooping-cough.

Irish Towns.—The 183 deaths in Dublin corresponded to an annual rate of 23.6, or 0.6 per 1000 above that recorded in the previous week, and included 3 from infantile diarrhoea, 2 from scarlet fever, and 1 each from measles and whooping-cough. The 113 deaths in Belfast were equal to a rate of 14.7 per 1000, and included a fatal case of diphtheria.

(Week ended Feb. 8th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 15.0 and 17.2 per 1000 in the two preceding weeks, further rose to 21.0 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 20.2, or 3.3 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 9.1 in Hnfield, 9.3 in Grimsby, and 10.2 in Aberdare, to 33.0 in Huddersfield, 33.5 in Newcastle-on-Tyne, 33.7 in Liverpool, and 53.3 in Wigan. The principal epidemic diseases caused 176 deaths, which corresponded to an annual rate of 0.6 per 1000, and included 57 from diphtheria, 47 from infantile diarrhoea, 34 from whooping-cough, 22 from measles, 9 from scarlet fever, and 7 from enteric fever. The deaths from influenza, which had been 274, 222, and 272 in the three preceding weeks, further rose to 604, and included 100 in London, 55 in Liverpool, 42 in Newcastle-on-Tyne, 37 in Bradford, 28 in Manchester, 27 in Wigan, and 25 in Huddersfield. There were 5 cases of small-pox, 1080 of scarlet fever, and 1156 of diphtheria under treatment in the Metropolitan Asylums Board Hospitals and the London Fever Hospital, against 7, 1059, and 1178 respectively at the end of the previous week. The causes of 64 deaths in the 96 towns were uncertified, of which 9 were registered in Liverpool, 8 in Birmingham, 7 in Darlington, and 5 in Preston.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17.0 to 18.4 per 1000 in the three preceding weeks, further rose to 23.8 per 1000. The deaths from influenza numbered 31, while in 164 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 13 and 89 respectively. The 449 deaths in Glasgow corresponded to an annual rate of 20.9 per 1000, and included 15 from whooping-cough, 4 from measles, 3 from diphtheria, and 1 from infantile diarrhoea. The 274 deaths in Edinburgh were equal to a rate of 42.5 per 1000, and included 13 from whooping-cough and 1 from diphtheria.

Irish Towns.—The 194 deaths in Dublin corresponded to an annual rate of 25.0, or 1.4 per 1000 above that recorded in the previous week, and included 3 from infantile diarrhoea. The 168 deaths in Belfast were equal to a rate of 21.8 per 1000, and included a fatal case of enteric fever and of diphtheria.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

- Capt. E. A. W. Henley, New Zealand M.C., qualified at Dublin in 1901, and was a well-known practitioner at Napier, N.Z., where he died.
 Capt. A. G. S. Logie, R.A.M.C. (T.F.), qualified at Edinburgh in 1887, and prior to joining up was in practice at Newport, Mon., where he was public vaccinator to the Raglan District. He died at the 1st Northern General Hospital of pneumonia.
 Temp. Surg. W. P. Cowper, R.N., qualified at Glasgow in 1903, and held appointments at the West End Hospital for Nervous Diseases, at the Hampstead General Hospital, and at the Royal Westminster Ophthalmic Hospital. He was in practice in London prior to joining the Navy, and died from an illness contracted during the Battle of Jutland.
 Capt. R. Aitken, R.A.M.C.
 Surg.-Com. J. A. Keogh, R.N., qualified in Ireland in 1886, and joined the Royal Navy shortly afterwards.
 Capt. J. S. Cooks, R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1912.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

- Capt. C. C. Bamber, Royal Warwickshire Regiment, died at Kohat, India, eldest son of Col. C. J. Bamber, I.M.S. (retired).
 Capt. J. H. Milligan, Indian Army, reported missing September, 1915, now reported died of wounds at that time, eldest son of the late Dr. D. Milligan, of Edinburgh.
 Lieut. J. R. Milligan, Indian Army Reserve of Officers, reported wounded and missing March, 1916, now presumed killed at that time, son of the late Dr. D. Milligan, of Edinburgh.
 Lieut. B. R. Garrod, North Lancs Regiment, attached R.A.F., died in France of pneumonia, youngest and last surviving son of Col. Sir A. Garrod, K.C.M.G., A.M.S., of Chandos-street, London, W.
 Lieut. S. C. Johnson, late R.F.A., died suddenly after illness contracted on active service, son of the late Col. W. E. Johnson, I.M.S.

THE HONOURS LIST.

The following awards to medical officers in recognition of their gallantry and devotion to duty in the field are announced. All are members of the R.A.M.C. except where otherwise stated:—

Bar to Distinguished Service Order.

Major (Temp. Lieut.-Col.) DAVID AHERN, D.S.O.—For conspicuous gallantry and devotion to duty from August 30th to Sept. 3rd, 1918, during operation on the Arras front. He was responsible for the clearing of casualties from the divisional front. He showed great forethought in selecting sites for his forward posts, especially in establishing one post in a village which proved of the utmost value as an A.D.S. station. He was wounded while at his work, but refused to leave until the conclusion of operations. His energy and resource were instrumental in the prompt evacuation of the wounded.

Capt. (acting Lieut.-Col.) ALEXANDER DONAL FRASER, D.S.O., M.C.—For conspicuous gallantry and devotion to duty. He was in charge of bearer divisions during the operations in the neighbourhood of Moyenneville—Erville—St. Leger from August 21st to August 28th, 1918, and was continually among the leading troops under heavy shell and machine-gun fire directing the evacuation of wounded from R.A.P.s. He managed to get ambulance cars close up to the firing line, which greatly accelerated the clearing of casualties to the rear. He was untiring throughout the whole period, and set a fine example to those under him.

Major (acting Lieut.-Col.) CHARLES READE MUNROE MORRIS, D.S.O.—For exceptional gallantry and devotion to duty on Sept. 20th to 24th south-west of Villers Guislain, in working continuously for five days under heavy shell fire, supervising and co-ordinating the work of the medical officers while at work at night in the advanced dressing station. It was twice blown in by shell burst. He carried out important surgical work, and by his pluck and endurance set a fine example to all around him.

Distinguished Service Order.

Lieut.-Col. WILLIAM HAROLD KERR ANDERSON, Can. A.M.C.—During the operations before Arras, Sept. 2nd to 5th, he was in charge of the evacuation of wounded. He succeeded in keeping in close touch with the infantry during the whole of the battle, so that the wounded were evacuated almost as soon as they became casualties. His duties were often performed under enemy artillery fire which caused many casualties, but by his courage and personal example he kept his men at their splendid work until all casualties were carried out.

Major (acting Lieut.-Col.) WILLIAM ALFRED GORDON BAULD, Can. A.M.C.—For conspicuous gallantry and devotion to duty during mounted operations from Oct. 8th to 11th, 1918. He was in command of the advanced cavalry field ambulances. On the night of Oct. 9th-10th, when ordered to search and clear the wounded from three villages, which were being heavily shelled and the approaches badly damaged by craters, he organised the evacuation of the wounded, making certain that all were found and removed. He showed great coolness and energy.

Major DONALD DUNBAR COUTTS, Aust. A.M.C.—On Sept. 1st, 1918, during the attack at Mont St. Quentin, although the R.A.P. was constantly shelled, he attended the wounded almost continuously for 52 hours, during five of which he was forced to wear his gas respirator, displaying throughout the greatest courage and devotion to duty. On the day prior to the attack a shell burst on a dug-out, wounding several men and pressing one down, severely wounded, blocking the entrance. He immediately went forward, regardless of intense shell fire, and succeeded in extricating the man and removing him, over exposed ground, to the rear.

Major GEORGE WILLIAM HALL, Can. A.M.C.—For conspicuous gallantry and devotion to duty. During the action in front of Arras, from Sept. 2nd-8th he was in charge of the evacuation of wounded. Time and time again he went through heavy enemy shell and machine-gun fire to direct the clearing of the wounded. On the afternoon of Sept. 2nd he succeeded in clearing a number of wounded who were being shelled with gas shell to a place of safety, and dressed many wounded under heavy fire. His work throughout the battle was admirable.

Temp. Capt. (acting Major) HUGH ROSS MACINTYRE, M.C.—For conspicuous gallantry and devotion to duty during operations on the Flave between Oct. 27th and 29th, 1918, especially on the morning of the 27th when in charge of stretcher-bearers. He crossed to the right bank of the Flave immediately behind the infantry under very heavy fire, and supervised the collection and evacuation of the wounded under great difficulties, having to ford the river several times. He set a very fine example to all under him by his untiring energy and total disregard for his own safety.

Lieut.-Col. JAMES HARDIE NEIL, N.Z.A.M.C.—For conspicuous gallantry and devotion to duty during operations near Bapaume and Bancourt from August 23rd to Sept. 3rd, 1918. He was in command of the ambulance and constantly visited the forward R.A.P. under heavy shell fire, and selected positions for the bearer relay posts. During the action round Bancourt he went forward with two light ambulance cars to within a few hundred yards of the front line and supervised the evacuation. It was owing to his gallantry and personal supervision that the evacuation of the wounded was so successfully carried out.

Capt. PATRICK JOSEPH FRANÇOIS O'SHEA, M.C., Aust. A.M.C.—For conspicuous gallantry and devotion to duty near Chuignu on August 23rd, 1918. Keeping up with the advance, he was always in the hottest part of the line dressing wounded and organising stretcher-bearers. Realising that an R.A.P. could not cope with the casualties, he dressed them where they lay and made prisoners carry them back. In many cases he carried men back himself under heavy fire of all descriptions and working in gas-drenched areas. He had no rest for three days and nights, and did another medical officer's work as well as his own.

Temp. Capt. (acting Major) PHILIP RANDAL WOODHOUSE, M.C.—For conspicuous gallantry and devotion to duty in command of a bearer division. On Sept. 27th, 1918, at Maison Rouge, when loading wounded on an ambulance wagon it was damaged and an ammunition dump close by set on fire by heavy shelling. He at once got the fire out and evacuated the wounded to safety. On two other occasions he did good work under heavy shell fire, clearing a road which was blocked by a tree blown across it and also in evacuating wounded when his A.D.S. was hit by a shell.

Third Bar to Military Cross.

Temp. Capt. CHARLES GORDON TIMMS, M.C.—For conspicuous gallantry and devotion to duty near Cambrai on Oct. 1st, 1918. During a severe enemy barrage, when his C.O. was wounded, he at once took up a squad of stretcher-bearers into the barrage to the rescue, tending his wounds and seeing that he was conveyed to a place of safety.

Second Bar to Military Cross.

Temp. Capt. (acting Major) GEORGE BOYD McTAVISH, M.C.—For conspicuous gallantry and devotion to duty west of Villers Gislelain from Sept. 19th to 27th, 1918. He worked for eight days and nights, refusing to be relieved, walking constantly through heavy barrages and machine-gun fire, organising bearer squads on the whole divisional front. Although gassed he still carried on, and saved the life of an officer who was knocked over by a shell when he was talking to him, holding an artery until help came, he himself having been knocked over by the same shell.

Bar to Military Cross.

Capt. JOHN ERNEST AFFLECK, M.C., Can. A.M.C.—For conspicuous gallantry and devotion to duty during the fighting east of Arras, Aug. 26th-28th, 1918. His work was carried out under continuous shell and machine-gun fire, and many times he led his bearers close up to the front line, collecting seriously wounded men. By his cool judgment and energy he was enabled to get all the wounded under cover.

Temp. Capt. (acting Major) JOHN CRAWFORD, M.C.—In the area north of Ypres occupied by Belgian troops on Sept. 23th-30th, 1918, he was conspicuous for his indefatigable efforts in evacuating the wounded from six field batteries and ten T.V. batteries. During the advance he was constantly well ahead, with complete disregard for his own safety, under heavy shell-fire, and by his initiative and organisation all the wounded were evacuated smoothly and rapidly.

Capt. WILLIAM DONALD, M.C.—For conspicuous gallantry and devotion to duty during operations against Sugar Loaf and Thetassel on Sept. 18th and 19th, 1918. He went fearlessly forward under the heaviest fire to rescue wounded lying in front of the enemy's positions. By his courage he set the finest example to his stretcher-bearers, and was instrumental in saving many lives. He worked incessantly for three days, and refused to rest until all wounded had been brought in.

Capt. CHARLES MARSH GOZNEY, M.C.—For conspicuous gallantry and devotion to duty during the attacks on Happy Valley and Molaines between August 24th and Sept. 2nd, 1918. He showed great initiative in moving his aid-posts forward and keeping in touch with the advanced troops. His arrangements for the evacuation of the wounded were splendid, and he undoubtedly was responsible for the saving of many lives.

Temp. Capt. FRANÇOIS HENDERSON, M.C.—For conspicuous gallantry and devotion to duty at Maanieres on Oct. 1st, 1918. He worked under heavy fire throughout the day and cleared the battlefield all through the night. Hearing that two officers of another division were lying out severely wounded, he made his way to them under heavy shell fire, dressed them, and brought them safely in. His work throughout was magnificent.

Capt. KENNETH ARTHUR McLEAN, M.C., Aust. A.M.C.—On August 31st, 1918, near Clercy, the battery was heavily shelled, two men being killed and two badly injured. He immediately went to the battery and commenced dressing one man who could not be moved. He continued his work until one shell burst close to him, wounding him severely in the arm and mortally wounding the stretcher-bearer who was assisting him. He showed marked courage and devotion to duty.

Temp. Capt. HENRY LESLIE MESSINGER, M.C.—For conspicuous gallantry and devotion to duty on Sept. 18th, 1918, near Doldeji. He led a party of stretcher-bearers some 400 yards across the open through a heavy barrage, and succeeded in rescuing and bringing in a large number of casualties to his advanced post. The next day he established touch forward with the attacking battalions under heavy artillery and machine-gun fire. Throughout the action he showed the greatest energy and disregard of personal danger.

Capt. DUNCAN ARNOLD MORRISON, M.C., Can. A.M.C.—For conspicuous gallantry and devotion to duty during the operations on Sept. 2nd and 3rd, 1918, between Cagnicourt and Bulsey, when he kept in touch with four infantry battalions, repeatedly going up and down under heavy fire, hastening the evacuation of the wounded. He was untiring in searching for any who might have been overlooked and directing the bearers in their duties. His coolness and judgment helped on the evacuation enormously.

Capt. (acting Major) WILLIAM BARRY POSTLETHWAITE, M.C.—For conspicuous gallantry and devotion to duty on August 22nd, 1918, in clearing casualties at the crossing of the Ancre river. On August 25th, 1918, he had great difficulties in the advance beyond Pricourt, owing to heavy shelling, but by a daring reconnaissance found a comparatively safe track for evacuating the wounded. On August 30th, north of Comblès, after searching all night, he again found a practicable evacuation route. His endurance and initiative were beyond praise.

Capt. (acting Major) JOHN GRAY RONALDSON, M.C.—For conspicuous gallantry and devotion to duty in the operations near Ombredon from Sept. 18th to 30th, 1918. He was in charge of the bearers clearing the divisional front, and during the whole period he was living under heavy shell fire, including gas. Through casualties to M.O.s, he had only one officer left to help him, but by constantly visiting the front posts he cleared all casualties and his cheerfulness kept up the spirits of the bearers.

Temp. Capt. (acting Major) WILLIAM RUSSELL, M.C.—For conspicuous gallantry and devotion to duty whilst in command of bearers near Balfeul on August 22nd and 24th and Sept. 3rd, 1918. He constantly visited all the R.A.P. by day and night, often under considerable shell and machine-gun fire, and disposed of his bearers and ambulance cars with such skill that all wounded were collected and placed in the most favourable conditions for recovery with the utmost celerity. Later he was gassed by a direct hit on his A.D.S., but continued to evacuate wounded until his relief arrived.

Capt. CEDRIC MURRAY SAMSON, M.C., Aust. A.M.C.—On the morning of August 22nd, 1918, north of Chilly, on the Bray-Corbée Road, he took a car along to the R.A.P. in spite of heavy shelling and gas. He superintended the line of evacuation continually, taking fresh squads up to R.A.P. through heavy fire. Again, on August 31st, he dressed a wounded medical officer and his orderly in the open, being wounded while doing so. During the period August 20th-31st, 1918, his fearless energy and devotion to duty were responsible for the rapid evacuation of so many wounded.

Capt. HUGH KINGSLEY WARD, M.C.—For conspicuous gallantry and devotion to duty on July 10th, 1918, when, after an intense bombardment of several hours, the enemy attacked the battalion sector east of Newport Bains. During the bombardment he went up to the front line and remained in attendance on a badly wounded officer until he died. He was subsequently wounded while attending another officer, but continued looking after many other wounded men until he returned to the dressing station, when he worked for over two hours in the open, and when the enemy approached he stood outside to prevent them bombing the wounded.

The Military Cross.

Capt. HUGH WANSLEY BAYLY, M.C.—On Sept. 16th, 1918, at Saudeumont, when the village was heavily bombarded, in spite of the fact that he himself was ill, he remained at his post dressing and attending to the wounded, and throughout a trying period he displayed admirable composure and disregard of danger.

Temp. Capt. (acting Major) JAMES BIGGAM—For conspicuous gallantry and devotion to duty. On the night of Oct. 3rd-4th, 1918, he carried important messages to advanced collecting posts at Joncourt, the road being under heavy machine-gun fire and bombing from aircraft. On the night of Oct. 9th-10th he carried out an exhaustive reconnaissance of roads and villages under heavy shell fire. His untiring energy was worthy of great praise.

Lieut. GEORGE EDMOND JOY BICKETT—For conspicuous gallantry and devotion to duty throughout Sept. 15th and 16th, 1918, during operations south of Malmezy. Working under heavy shell and machine-gun fire he brought in several wounded men. The enemy shot down many stretcher-bearers and stretcher parties on the 16th, but this officer worked indefatigably and continued to search for and bring in wounded until he was wounded in the spine by a sniper on the 16th. By his personal courage and energy he undoubtedly saved many valuable lives.

Temp. Capt. DANIEL MICHAEL BOHANN.—For conspicuous gallantry and devotion to duty during the attack on the "P" Bridge on Sept. 19th 1918. Having established an aid post and dressed a very large number of casualties, he moved forward with stretcher-bearers in front of the line and brought in wounded from the most exposed positions under trench-mortar and machine-gun fire. He worked continuously from dawn to dark, regardless of personal danger.

Capt. (now Major) JOHN ALFRED BRIGGS, Can. A.M.C.—During the fighting east of Arras, August 26-28th, 1918, this officer worked continuously. On many occasions he led his stretcher-bearers forward close up to the front line under heavy shell and machine-gun fire to dress and evacuate wounded. Although blown up and bruised by a shell he refused to leave, and remained on duty. He set a fine example of gallantry and devotion to duty.

Capt. (acting Major) HECTOR MACKAY CALDER, D.S.O.—For conspicuous courage during operations between August 22nd and Sept. 8th, 1918, in the region of Happy Valley, north of Bray, and at Molainne. He did most valuable work evacuating wounded under most strenuous conditions, and during the many periods of heavy shelling his untiring zeal was a powerful stimulus to all ranks.

Capt. PHEDRICK THOMAS CAMPBELL, Can. A.M.C.—For conspicuous gallantry and devotion to duty. During an advance on the Canal du Nord on Sept. 3rd, 1918, the battalion suffered heavy casualties from shell fire, and as it was impracticable to evacuate the wounded he went up and attended to them under heavy fire. Throughout four days he was conspicuous for his disregard of fatigue or danger, and undoubtedly saved many lives by his efforts.

Temp. Capt. GRAHAM WILSON CHRISTIE.—For conspicuous gallantry and devotion to duty during operations on Oct. 1st and 2nd, 1918, near Gheluwe. He dressed the casualties of the advanced guard, under heavy shelling and machine-gun fire. During 36 hours he evacuated over 200 wounded from different units, working continuously without rest. His skill and quickness undoubtedly saved lives.

Capt. LEWIS PIERCE CHUMCHILL, Can. A.M.C.—During the fighting east of Arras, August 28th-29th, 1918, he was continuously on duty under heavy shell fire, and had absolutely no relief during the whole period. He kept in touch with all his B.A.P. and was responsible for the rapid evacuation of his wounded from the forward line. His zeal and devotion to duty were admirable.

Temp. Capt. AILWYN HERBERT CLARKE.—For conspicuous gallantry and devotion to duty on Oct. 10th, 1918, about two miles north-west of Le Cateau. He several times proceeded under heavy shelling to the sunken road south-east of Bambourilleux Farm, to attend to wounded. He succeeded in dressing all the wounded under heavy fire, and got them carried away to safety.

Capt. HERBERT AUGUSTUS COCHRANE, Can. A.M.C.—On Sept. 2nd, 1918, when the battalion attacked the Droocourt-Queant line, although wounded two days previously, he remained at duty and established a dressing station well forward before zero hour. Shortly after the start of the attack he dressed several cases under heavy barrage and continued forward, dressing many wounded in the open under machine-gun fire. He worked all day, continually exposing himself, and his gallant conduct undoubtedly saved a great deal of suffering.

Capt. FREDERICK BROCKEN DAY, Can. A.M.C.—On Sept. 2nd, 1918, near Arras, for marked gallantry and devotion to duty. During the course of the battle he made many trips under heavy machine-gun fire to dress wounded, and afterwards dressed wounded for hours in his aid-post, not only those of his own battalion but also of at least five other battalions and many wounded of the enemy. It was without doubt due to his exertions that the wounded were cleared so quickly, and many lives were saved thereby.

Temp. Lieut. CHRISTOPHER DEAN.—For conspicuous gallantry and devotion to duty at Holnon during the operations of Sept. 17th and 19th 1918. Although suffering from a sprained ankle, he was untiring in his efforts to collect and attend wounded. He was constantly exposed to shell fire, but took no notice for himself, though he made his stretcher-bearers take cover.

Temp. Capt. FREDERICK ROBERT DOUGAN.—On August 26th, 1918, near Mametz, when this officer was clearing an infantry brigade, the Sussex Regiment was held up in a valley, the only exit from which was in full view of the enemy. Throughout the day this officer repeatedly brought up squads of bearers and superintended the removal of the wounded under continued heavy fire. Had it not been for his personal courage the wounded of the battalion could not have been cleared for many hours. On another occasion he personally led a single squad under heavy fire in order to bring in a wounded N.C.O. of his own bearer division.

Temp. Capt. JOHN MELVILLE ELLIOT.—For conspicuous gallantry and devotion to duty under heavy fire when in charge of stretcher-bearers on Sept. 18th-19th, 1918. He took squads backwards and forwards from A.D.S. to B.A.P. near Sugar Loaf through heavy barrages. He also assisted in dressing wounded for 48 hours unceasingly in a constantly shelled camp. It was mainly due to his initiative and disregard of personal danger that touch was kept with B.M.O.'s under very trying circumstances.

Temp. Capt. ALEXANDER KNITH FORBES.—For conspicuous gallantry and devotion to duty east of the Canal du Nord on Sept. 27th, 1918. Soon after zero he established the B.A.P. in the Canal, having to cross a stretch of ground swept by machine-gun fire. From this well-chosen forward post he was able to dress all the wounded of his own and other units, undoubtedly saving many lives. He went out many times into the shell-swept area and brought in wounded.

Capt. NORMAN MCLEOD HALKETT, Can. A.M.C.—For conspicuous gallantry and devotion to duty during operations against the Droocourt-Queant line near Dury between Sept. 1st-3rd, 1918. Near Vis-à-Artote the area in which the regimental aid post was located was persistently searched by enemy artillery, causing many casualties. He attended to the wounded in the open in spite of heavy shelling. Later the regimental aid post was established in an open trench, and he again carried on under severe shell fire with untiring energy and utter disregard for his own personal safety.

Capt. JOHN CLAUDE MOSELEY HARTER, Aust. A.M.C.—During the operations on the Somme River and east of Mont St. Quentin on August 29th and Sept. 2nd, 1918, he displayed the greatest gallantry and coolness in attending the wounded, although he was under heavy shell and machine-gun fire for the whole time. His untiring energy and splendid example and his personal supervision of the evacuation of the wounded yielded excellent results in spite of most trying conditions.

Temp. Lieut. BENJAMIN HUTCHINSON.—During the operations east of Arras on August 30th, 1918, he displayed conspicuous gallantry and devotion to duty, working in the open under heavy machine-gun and artillery fire attending to the wounded with an unselfish disregard of danger that was a splendid example to all.

Capt. PHOEBIC BOZART JAMES, Aust. A.M.C.—During the attack on Peronne on Sept. 1st-3rd, 1918, this officer was conspicuous for his gallantry and devotion to duty, working unceasingly under heavy fire and practically without sleep during the whole period, attending to a large number of wounded. His energy and untiring self-sacrifice were worthy of the highest praise.

Temp. Capt. HENRY MICHAEL JOSEPH.—During operations from August 8-10th, 1918, near M. riancourt, this medical officer displayed great courage and energy in dealing with the wounded. On August 10th, 1918, he moved forward immediately behind the fighting troops and saved many lives by timely action. When the objective was gained, and battle patrols went out, the enemy's machine-gun fire was especially heavy; he nevertheless went forward and dealt with cases, carrying one badly wounded man to a place of safety on his back under heavy fire.

(To be concluded.)

The following awards for services rendered in East Africa are announced:—

C.M.G.—Temp. Lt.-Col. H. B. G. Newham, R.A.M.C.; Maj. (acting Lt.-Col.) E. H. Humphrey, R.A.M.C.
C.I.E.—Lt.-Col. (temp. Col.) W. W. Clemesha, I.M.S.
O.B.E.—Capt. C. P. E. Wall, S. Afr. M.C.; Capt. I. J. Block, S. Afr. M.C.; Temp. Capt. A. G. Eldred, Nyasaland M.C.; Temp. Capt. C. E. Howard, R.A.M.C.; Temp. Capt. G. Madge, R.A.M.C.; Temp. Capt. L. E. H. P. Marshall, R.A.M.C.; Temp. Capt. S. Mason, S. Afr. M.C.; Capt. G. McG. Miller, I.M.S.; Temp. Maj. R. Semple, R.A.M.C.; Temp. Maj. R. Standish White, R.A.M.C.
To be Brevet Major.—Capt. (acting Lt.-Col.) J. D. Kidd, M.C., R.A.M.C.; Capt. (acting Lt.-Col.) J. A. Manfold, D.S.O., R.A.M.C.; Capt. E. A. Sutton, M.C., R.A.M.C.
Military Cross.—Capt. A. Robertson, R.A.M.C.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned in despatches:—

British Salonika Force.

Staff.—Maj. (temp. Lt.-Col.) J. A. Anderson, R.A.M.C.; Col. E. T. F. Birrell, O.B.E., C.M.G., A.M.S.; Col. H. J. M. Bulet, O.B.E., D.S.O., A.M.S.; Capt. (acting Maj.) W. F. Christie, R.A.M.C.; Lt.-Col. (acting Col.) T. B. Fielding, D.S.O., R.A.M.C.; Maj. W. E. Gaiway, O.B.E., M.C., R.A.M.C.; Lt.-Col. J. E. Hodgson, O.B.E., R.A.M.C. (died); Maj. and Bt. Lt.-Col. (temp. Col.) C. W. Holden, D.S.O., R.A.M.C.; Maj.-Gen. M. P. C. Holt, C.M.G., O.B., D.S.O., A.M.S.; Capt. (acting Maj.) N. V. Lothian, M.C., R.A.M.C.; Lt.-Col. C. B. Martin, C.M.G., R.A.M.C.; Lt.-Col. and Bt. Col. (temp. Col.) W. H. S. Nickerson, V.C., C.M.G., R.A.M.C.

Army Medical Service.—Temp. Col. L. S. Dudgeon, C.M.G.; Temp. Col. E. R. Kelly, O.B. (Capt. and Bt. Maj., R.A.M.C. (T.F.)); Temp. Col. A. G. Phear, C.B.

Royal Army Medical Corps.—Temp. Capt. (acting Maj.) A. G. Anderson; Temp. Capt. D. I. Anderson, O.B.E.; Temp. Capt. J. M. Bailey, O.B.E.; Temp. Capt. (acting Maj.) G. V. Bakewell, O.B.E.; Temp. Capt. V. J. Bonavia; Lt.-Col. M. Boyle, O.B.E.; Temp. Capt. M. S. Bryces, M.C.; Temp. and Lt. (temp. Maj.) W. B. Butler; Temp. Capt. (acting Maj.) S. Campbell; Temp. Capt. L. Cassidy; Temp. Capt. A. H. Coleman, O.B.E.; Temp. Capt. J. A. Delmege, O.B.E.; Temp. Capt. E. R. Elworthy, O.B.E.; Temp. Capt. C. Y. Flewitt; Temp. Capt. G. O. Hempton; Temp. Capt. (acting Maj.) J. V. Holmes; Temp. Capt. N. B. Kendall; Temp. Capt. F. Newey; Temp. Capt. J. L. H. Paterson; Temp. Capt. (acting Maj.) W. H. Peacock; Temp. Capt. W. Thomas; Lt.-Col. A. D. Waring; Temp. Capt. J. Warnock; Temp. Capt. J. S. Webster; Temp. Lt.-Col. O. M. Wenyon, C.M.G.; Temp. Capt. H. O. West; Temp. Capt. E. C. White.

R.A.M.C. (S.E.).—Capt. (acting Maj.) T. Y. Barkley, O.B.E.; Capt. R. D. Cameron; Capt. (acting Maj.) W. B. Foley, O.B.E.; Capt. A. G. Harasat; Capt. G. M. Hetherington; Capt. H. E. McCall, O.B.E.; Capt. (acting Maj.) R. McKinlay; Capt. W. O. F. Sinclair.

R.A.M.C. (T.F.).—Capt. G. L. Findlay; Maj. (temp. Lt.-Col.) J. Gray, O.B.E.; Capt. T. S. Hele; Capt. A. M. Jones; Maj. (acting Lt.-Col.) A. B. Kidd; Capt. (acting Maj.) J. O. Marklove; Lt.-Col. P. Mitchell, O.B.E.; Capt. (acting Lt.-Col.) K. P. Nash; Capt. (temp. Lt.-Col.) J. Patrick; Capt. (acting Maj.) H. A. Playfair-Robertson; Capt. J. Steedman; Capt. (acting Maj.) W. D. Sturrock, D.S.O.; Capt. (acting Maj.) J. Taylor, O.B.E.; Lt.-Col. F. H. A. Webb, O.B.E.

East African Force.

Staff.—Col. G. W. Tate, C.M.G., D.S.O., A.M.S.
R.A.M.C.—Capt. D. O. Buchanan; Temp. Capt. C. E. Olaj; Temp. Capt. H. M. Fisher; Temp. Capt. T. J. H. Hawkins; Temp. Capt. O. E. Howard (died); Maj. (acting Lt.-Col.) R. B. Humphrey; Temp. Capt. G. Madge; Temp. Capt. L. E. H. P. Marshall; Temp. Lt.-Col. H. B. G. Newham; Temp. Maj. R. Semple; Temp. Capt. H. W. L. Sharp; Temp. Maj. R. Standish White.

South African Medical Corps.—Capt. O. P. Bligh-Wall; Capt. I. J. Block; Temp. Capt. S. Colyer; Lt. T. J. Dwyer; Temp. Capt. T. A. Fuller; Capt. A. W. Goldsmith; Temp. Capt. S. Mason; Temp. Capt. W. McG. Montgomery; Maj. E. C. Morley-Roare; Capt. (acting Maj.) W. H. E. Sutton.

East African Medical Service.—Capt. W. A. Trumper; Maj. (acting Lt.-Col.) A. D. J. B. Williams.

Nyasaland Medical Service.—Temp. Capt. H. B. Arbuckle; Temp. Capt. A. G. Hildred.

Rhodesian Medical Corps.—Temp. Capt. F. Innes; Temp. Capt. R. E. Murray; Temp. Capt. W. J. Sheehan.

Indian Medical Service.—Capt. W. D. Keyworth; Capt. G. McG. Miller; Capt. W. J. Simpson; Lt.-Col. R. P. Standage.

PAY IN THE INDIAN MEDICAL SERVICE.

| | Rank. | Grade pay. |
|---|-------|------------|
| Lieutenant | ... | 350 |
| Captain | ... | 400 |
| " after 5 years' service | ... | 450 |
| " after 7 years' service | ... | 500 |
| " after 10 years' service | ... | 550 |
| Major | ... | 650 |
| " after 3 years' service as Major | ... | 750 |
| Lieutenant-Colonel | ... | 900 |
| " specially selected for increased pay. | ... | 1000 |

| | Rank. | Grade pay. |
|---|-------|------------|
| Lieutenant | ... | 350 |
| Captain | ... | 400 |
| " after 5 years' service | ... | 450 |
| " after 7 years' service | ... | 500 |
| " after 10 years' service | ... | 550 |
| Major | ... | 650 |
| " after 3 years' service as Major | ... | 750 |
| Lieutenant-Colonel | ... | 900 |
| " specially selected for increased pay. | ... | 1000 |

The object of this measure being to attract to the Service European candidates with the highest professional qualifications, the question whether Indian candidates entering the permanent Service after Dec. 1st, 1918, shall be eligible for increased rates of pay, and if so, to what extent and under what conditions, has been reserved for future consideration. All Indian officers already in the permanent Service on Dec. 1st, 1918, will be eligible for the increased rates of pay. As regards private practice Mr. Montagu explained that, subject to the reservation that it must be under the control of Government, he was of opinion that it was to the public interest that the Service should enjoy as fully as possible opportunities of private practice, and he assured the deputation that no further restriction of the facilities for private practice now enjoyed by the Service was contemplated.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. Lieuts. A. W. Cocking, J. G. Stevens, and H. C. C. Veitch have been transferred to the Permanent List as Surgeon-Lieutenants.

ARMY MEDICAL SERVICE.

Temp. Col. C. C. Choyce relinquishes his commission.
Temp. Col. H. A. Ballance (Major (temp. Lieut.-Col.), R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.
The undermentioned temporary appointments as Staff Surgeon is made at the War Office: Capt. T. Sheedy, R.A.M.C., Spec. Res.

ROYAL ARMY MEDICAL CORPS.

Capt. (acting Major) W. B. Allen, V.C., from R.A.M.C. (T.F.), to be Captain and to retain his acting rank.

Major (acting Lieut.-Col.) A. H. Cheate relinquishes his commission on ceasing to be employed, and is permitted to retain the rank of Major-General.

Correspondence.

"Audi alteram partem."

THE MEDICAL EFFECTS, OF THE TUBE STRIKE.

To the Editor of THE LANCET.

SIR,—The medical profession has a special interest in the effect of the recent Tube strike upon the poorer classes of London and its suburbs. The absence of travelling facilities inflicted more than mere hardship upon thousands of delicate and elderly individuals of both sexes, workers all of them. Only the medical man can know the thousands of injuries received in the struggle to enter the overcrowded buses, and the serious and fatal illnesses incurred by the long walks through frost and sleet after the day's labour, and the insidious beginnings of chronic ill-health originated by the suffering uncomplainingly borne by those who were obliged to spend sleepless nights on the floors of offices and crowded lodging-houses.

It has been suggested that medical men and women should compile with care a list of these results which are known to them personally. Revolution, with its bloody toll of human lives belonging to the upper classes, may leave the imagination of the worker cold. The illness and death of fellow workers, brought about by his hasty action, would of a surety bring home to him the cruelty he had unwittingly caused, and lead him to realise that the action of the Government in taking precautions to become independent of Labour had as motive not the protection of the capitalist but the protection of the workers themselves.

I am, Sir, yours faithfully,

Weymouth-street, W., Feb. 11th, 1919.

AGNES SAVILL.

A NATIONAL MEDICAL SERVICE: WHAT IS IT WORTH?

To the Editor of THE LANCET.

SIR,—In the programme of reconstruction figures largely the Ministry of Health, which is generally expected to deal with the question of supplying medical assistance to the whole or a portion of society. This is a question which must interest the public as well as the medical profession, and this letter may help everyone to appreciate the position of members of that profession.

The National Health Insurance Act has not been an unqualified success, and any scheme grafted on this will not meet with the undivided support of the medical profession.

The faults in the Insurance Act are many:—1. It treats the rural practitioners similarly to the urban, though the conditions of practice are essentially different in the two cases. 2. The costs of administration are too large for the benefits given. Many men outside the medical profession draw larger salaries than the practitioners who do the work. This last objection would be removed if these posts were filled by medical men incapacitated by the war from taking a part in the wear-and-tear of general practice. 3. The Insurance Committees have not protected the profession from the mean people whose income is above the limit, although this could have been done by a reference to the surveyor of taxes. 4. The question of inflation. My Insurance Committee admits that there are more patients on the panel in this county than they receive subscriptions for, and therefore do not pay the full capitation fee. This is not the fault of the doctors, yet they are liable to provide professional attention to every person for whom the Insurance Committee has issued a card. 5. Delay in settlement of accounts. In November, 1918, I received cheque in settlement of 1917 account.

All these difficulties must be overcome if any use is to be made of the machinery of the Insurance Act. Personally I advocate the scrapping of the Poor-law Medical Services and the Health Insurance Act, and that the whole service, under whatever scheme is adopted, be organised by the existing Public Health Service in the different counties and boroughs.

The idea which most appeals to me is that of Sir Bertrand Dawson—i.e., "team-work."

This scheme in the towns would go far towards achieving the objects we all desire. It would save the time both of doctors and patients, because under this scheme we should arrive at a correct diagnosis with the least possible delay; the doctors might even have some chance of an "eight-hour

day," and why not? Even in rural districts the organisation of a "team service" of motor ambulances and laboratories should be a possibility which could be realised for the collection of patients and specimens to be taken to the base or clinic with notes from the general practitioner.

This brings us to the question of remuneration as the scheme to be successful must be generously endowed.

It has been suggested that any scheme the Government may introduce must result in a loss of income to the profession. I do not believe this to be the case, because we all know under present conditions how many people get more than their money is worth owing to the human sympathy of the great majority of the profession. In our dealings with the State through the Ministry of Health no such consideration is demanded. The State has the money; after the armistice was signed—but before the General Election—wages were raised 5s. a week in consideration of the increased cost of living.

What did the State do for the doctors during the war? The fee for the notification of infectious diseases was reduced from 2s. 6d. to 1s. The State has the money, and if the popular principle of "nothing for nothing" were adopted in the case of the medical profession the average income would be increased rather than diminished. This involves the State control of all charitable institutions. The medical and surgical staffs of these institutions would be paid either on a whole-time basis or by a definite fee for each operation or consultation.

Mr. Lloyd George has said every man should have a fair return for what he has to offer. In many cases the physician or surgeon offers life. What is it worth? In the case of the specialist recognised as able to render valuable service to the State is it not worth the £5000 a year of a Cabinet Minister or a judge? The position of the general practitioner is not so straightforward, but I state my view frankly that every capable general practitioner by the time he is 40 years old should be able to earn an income of £1000 per annum free of all expenses in the earning thereof.

There are objections to a whole-time district medical officer:—

1. It interferes with the independence of the doctor and the patient.
2. It tends to diminish the competitive element and the personal equation. Many general practitioners owe their success in practice not to academical attainments, but to personal qualities not correctly estimated in the examination room.

We have all had a good deal of registering to do lately, so that it would not be an innovation or hardship if some such method were adopted as the following:—

Every general practitioner recognised by the State to be paid a retaining fee, say £300 per annum, as compensation for the time and money expended on his education which the State expects to utilise and has never endowed in any way. Every person included in the scheme must register with the doctor of his choice. The doctor to be paid for services rendered, on a fixed scale, from funds collected and administered by one central body, and provided by a special tax or by an addition to the income set aside for this purpose. In this way the delay in meeting the doctors' accounts should be obviated. The question of mileage might be met by the grant of free petrol on the basis of existing petrol licences.

Finally, who is to be allowed to take advantage of this scheme, and where is the line to be drawn? I would suggest that as the Government has failed in the past to protect the profession from imposition by those above the wage-limit, it will not be able to do so in the future; the profession must therefore insist on a remuneration which will cover every class of society, and every member of society will be able to avail themselves of the Government system if they think it good enough.

The whole question of a successful National Medical Service appears to me to depend on the answer to the question of "What is it worth?" Can Mr. Lloyd George answer this question?—I am, Sir, yours faithfully,

Great Bookham, Surrey, Feb. 11th, 1919. G. SPENCE CANDY.

X RAYS IN THE DIAGNOSIS OF APPENDICITIS.

To the Editor of THE LANCET.

SIR,—The exhaustive paper by Dr. E. I. Spriggs on this subject in your issue of Jan. 18th should serve as an encouragement to physicians and surgeons to seek the assistance of the radiologist in obscure abdominal conditions, and as a stimulus to the radiologist himself to cast more widely his diagnostic net. On the technical side there

are points of detail in Dr. Spriggs's paper the carrying out of which would involve, at any rate in London, some amount of inconvenience, if not actual difficulty. The first is the supply of buttermilk for the special meal described. Fortunately, this particular meal is not necessary to demonstrate the appendix, although it is true that the ordinary mixture of bread and milk and barium often fails. I have now for two years used the meal introduced by Dr. James Metcalfe, and put up by Messrs. Allen and Hanburys under the trade name of "umbrose." In this the barium is very finely triturated and intermixed with the other ingredients, and probably for this reason has no difficulty in entering the appendix. A second point is that Dr. Spriggs states that the best view of the appendix is obtained 12-14 hours after the meal. Now, as a rule, one wishes to examine the stomach with the same meal. I have found personally that if the meal be given at 10 A.M., the appendix will be satisfactorily seen between 4 and 6 o'clock in the afternoon, or the next morning. In consulting-room practice the 12-14 hour examination is impossible as a routine, though it may be necessary to arrange for it in a few special cases. Lastly, those whose outfits do not permit of radiographing the appendix in less than one second should not be discouraged from examining it, as, although failure will occur in a few cases, in the majority reliable data will be obtained. With regard to the "numerous photographs" said to be necessary, a careful screen study is often of as much, or more, value, two or three plates being taken as a record at each examination. With the technique modified as above, there seems no reason why the X ray examination of the appendix should not be generally carried out.

As to the desirability of radiographic investigation of the appendix, a striking feature of the cases quoted by Dr. Spriggs is that few or none were suspected of having appendix trouble. Their ill-health had been ascribed to various causes other than this. Herein the present writer's experience coincides with that of Dr. Spriggs. I have frequently had cases sent to me for examination of the lungs or of the kidneys where the trouble ultimately proved to be appendicular. If a man should say that in all cases of chronic and unexplained ill-health the appendix should be investigated by X rays, perhaps he might be suspected of monomania; and yet his madness would not be without method.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 4th, 1919. F. HERNAMAN-JOHNSON.

THE PRESENCE OF A FILTER-PASSING VIRUS IN INFLUENZA, ETC.

To the Editor of THE LANCET.

SIR,—I have read with interest the preliminary report by Major-General Sir John Rose Bradford, Captain E. F. Bashford, and Captain J. A. Wilson, published in your issue of Feb. 1st, on a filter-passing virus found in certain diseases, the more so as it appears to lend support to the claim originally advanced by Nicolle and Lebaillly that influenza, one of the diseases specifically mentioned in that report, is due to a filterable virus. If this be further substantiated by others, it follows that Pfeiffer's bacillus, as that is usually understood and described, can no longer be looked upon in the light of a responsible etiological factor. In a letter¹ expressing disbelief in the claims made by the advocates of Pfeiffer's bacillus, I ventured to state that we had to deal, not with a double infection, primary and secondary, but with one infective agent only and that a pleomorphic one of which I gave a brief description in a letter to THE LANCET of Nov 23rd, 1918.

Since writing these letters my attention has been drawn by a private correspondent to certain experimental work carried out by Rosenow² and others, working on acute epidemic poliomyelitis in America. I was unaware of the existence of this work at the time of writing but have since been able to gain access to some of Rosenow's articles. I have been struck with the extraordinary resemblance between his organism and the one which I have already described and to which I have given the provisional name of organism "D." Whether Rosenow's organism is exactly identical or not with organism "D" I am unable to say, as all Rosenow's data are not available at present to me. It is well known, however, that Flexner and Noguchi were able to reproduce acute poliomyelitis by the inoculation of a

filter-passing virus, consisting of small "globoid" bodies. Rosenow and his co-workers have since been able to transform pure cultures of these globoid bodies, obtained from Noguchi's laboratory, into the pleomorphic organism which they claim is the cause of acute poliomyelitis. Not only so, but they have been able to grow their organism in the form of the Flexner-Noguchi "globoid" bodies.

In my letter of Dec. 21st, 1918, already referred to, I stated that the claim which I there made did not necessarily exclude the possibility of there being a filter-passer phase of organism "D." It seems necessary to emphasise this, in view of the accumulating evidence that influenza can be produced by a filterable virus. When once it has been proved that a given infective agent is a filter-passer it has been the custom to argue that other organisms, of ordinary size, which may previously have been regarded as the causative agents, are merely contaminations or secondary invaders. This argument is obviously fallacious unless and until it be proved beyond any question of doubt that the filterable virus can exist in no other form. It is just as fallacious as the argument that pleomorphism is a synonym for impurity of culture. It will be granted at once that in some cases such has been proved to be the case, but that pleomorphism does exist has been sufficiently well established by modern bacteriological methods.

In connexion with Rosenow's and my own claim it is of interest to refer to a letter which appeared in THE LANCET on Jan. 11th from the pen of Dr. F. G. Crookshank, in which the latter claims that, on epidemiological grounds, there is reason for believing that acute poliomyelitis, encephalitis lethargica, and influenza are so closely related as to constitute different group manifestations of a single infective agent. Such a view has much to commend it, and is at least quite as acceptable as that which, while the causes of these diseases are still in doubt, claims that encephalitis lethargica and poliomyelitis are to be regarded as two distinct diseases.

May I be allowed to add, in conclusion, a few further particulars for the benefit of those who may have been stimulated by my previous letters to look for organism "D"? The latter grows well at room temperature, does not liquefy gelatin, and produces acid without clot in milk. It forms acid in dextrose, lactose, maltose, saccharose, raffinose, and dextrin litmus peptone water. There is also an indication that the organism has some connexion with the Pasteurella group, but a definite statement on this point cannot be made at present.

I am, Sir, yours faithfully,

Reading, Feb. 4th, 1919.

ROBERT DONALDSON.

PARASITIC MANGE IN HORSES

To the Editor of THE LANCET.

SIR,—In July of last year I was instructed by the Joint Propaganda Committee—Board of Agriculture and Ministry of Food—to draw your attention to the prevalence of parasitic mange in horses and the likelihood of its spreading in the coming months; also to the issue by the Joint Committee of a special leaflet (No. 8) in which particulars were given (a) as to the Orders in existence in regard to the disease; (b) the penalties attached to breaches of the Orders; (c) means whereby the disease can be prevented, discovered, and treated.

Since the issue of this leaflet (No. 8) two additional leaflets on the same subject have been published which have had a very wide circulation.

We are informed that the local authorities view with growing anxiety the increasing prevalence of mange in horses reported in the returns furnished by them. Further, there are grounds for believing that the disease exists in many districts to a much greater extent than is revealed in the returns furnished. The Committee would like to point out the serious effect the disease has in decreasing the usefulness of the horse. These facts are the justification for the Joint Committee again asking you for the kind hospitality of your columns to make the existence of our leaflets as widely known as possible and to state that copies can be had free and post free on application.

I am, Sir, your obedient servant,

J. NUGENT HARRIS,

Secretary, Joint Committee, Board of Agriculture and Ministry of Food.

6A, Dean's-yard, Westminster, S.W. 1, Feb. 8th, 1919.

¹ Brit. Med. Jour., Dec. 21st, 1918.

² Journal of Infect. Diseases, Chicago, vol. xxii., No. 4, pp. 281 et seq.

INFLUENZA AND CHRONIC LUNG DISEASE.

To the Editor of THE LANCET.

SIR,—Whilst temporarily transferred for duty to Maitland Military Hospital, Cape Town, where there were upwards of 600 cases of influenza of every variety, I noticed that patients with a previous history of chronic catarrhal conditions of the lungs bore the disease well. On my return to Tempe, where the epidemic was very severe, I found this observation confirmed in the survival of all but 4 of 46 tuberculous patients, most of whom had contracted the disease. Two of these, however, were in the last stages of consumption before I left them, and I may add that many of those who recovered from the influenza attack were almost as bad. Of 27 natives suffering from glandular and pulmonary tuberculosis 4 died, and these were also cases of a desperate type. Further, 6 white patients with asthma and chronic bronchitis all contracted influenza and recovered without any complications.

It seems, therefore, fair to conclude that chronic catarrhal conditions of the lungs, even when associated with so formidable a disease as tuberculosis, confer a certain degree of protection against this disease. I shall be interested to know whether others better qualified than myself to judge have had a similar experience.

I am, Sir, yours faithfully,

DUNCAN MACKENZIE MACRAE, M.A., M.B., Ch.B.,
Captain, S.A.M.C.

Tempe, Bloemfontein, Dec. 13th, 1918.

THE MINISTRY OF HEALTH.

To the Editor of THE LANCET.

SIR,—The reports of meetings which have been held in order to support the formation of a Ministry of Health are proof that those who attend them know very little of the work which has been performed under present conditions. The Health Service in this country has given the lead to every other country in the world, and as the result, a large number of persons are attempting to pull down the foundations upon which the work has been carried out. The desirability of decentralisation, and not centralisation of power under politicians' régime, is the real problem. Now the political party dominant is apparently that of the working class, and the question arises, Has this party ever shown any desire to promote the interests of medical science? It was largely responsible for the introduction of the conscientious objector into the Vaccination Acts, and as a result vaccination against small-pox has become more and more a dead-letter. There is no guarantee that when health matters become more centralised and under political control the presence of politics will not again interfere with important safeguards against disease.

The present position with regard to venereal diseases is most unsatisfactory. These diseases are of the type of virulent infective disease, and the obvious course to be pursued is to make them notifiable under the Public Health Act and to leave them under the authority of the local councils. Politics must be considered, and therefore palliative measures are to be adopted and not measures sufficiently strong to stamp out the disease—a matter of no great difficulty from the practical scientific point of view.

The work performed by the Local Government Board and Home Office has, on the whole, been of a very high order, and I do not suppose that either Office has ever neglected to give sufficient support to medical officers of health in the carrying out of their duties. After more than 30 years of service as medical officer of health, one notice to quit, and a triumphant re-election owing to loyal support from the Local Government Board, I have had sufficient experience to be quite satisfied with the conditions under which I have worked. The troubles which most perplex medical officers of health are often caused by local politics, and I apprehend that worse will be in store for them when politicians of the Labour party are in power at the Ministry of Health.

One of the most difficult problems at the present time is that of housing, and this trouble has been the direct result of a popular land budget—passed by some politicians for the advantage of their party machine.

I am, Sir, yours faithfully,

LOVELL DRAGE.

Feb. 6th, 1919.

THE MEDICAL PARLIAMENTARY COMMITTEE:

A DINNER TO MEDICAL MEMBERS OF PARLIAMENT.

A DINNER, presided over by Sir W. WATSON CHEYNE, M.P., was given by the Medical Parliamentary Committee at the Café Royal, Regent-street, on Wednesday evening, Feb. 12th, to the medical Members of Parliament, when Dr. ADDISON, President of the Local Government Board, replying to the Toast of "The Guests," made a very free and frank statement with regard to the Bill erecting a Ministry of Health for England, Wales, and Scotland. He compared the differences of opinion manifested by various existing medical bodies to teething troubles, and said that he had no doubt that a way would be found to some form of organisation. The Bill, he said, would be immediately read for the first time, printed, and circulated, and he declared that it was the intention of the Government to consult the different representative organisations at the present juncture, and to make of the Advisory or Consultative Councils, which will be an essential part of the Bill, *bonâ fide* bodies, real and hard-working.

Sir BERTRAND DAWSON, speaking to the toast of "The Unity of the Medical Profession," said that the Ministry of Health was arriving, and would find the medical profession imperfectly organised to meet the situation.

Mr. E. B. TURNER, responding to this toast, said that though he had much experience of public speaking, this was the first time in which he had been asked to reply for a thing which was non-existent, but he urged the medical profession to get their best energies to work, and to work together like a good football team. Colonel HURRY FENWICK, who also spoke to Sir Bertrand Dawson's toast, agreed with Mr. Turner in finding unanimity in the medical profession remarkably absent.

Sir JAMES GALLOWAY proposed "The Medical Parliamentary Committee" in a thoughtful address upon the existing state of medical politics, and the CHAIRMAN replied in terms that justified the activities now being displayed by the Committee.

Preliminary to the speeches Dr. ARTHUR LATHAM read a brief statement setting out the objects before the Medical Parliamentary Committee. The statement showed that the Medical Parliamentary Committee consists of specially nominated representatives of a number of existing medical organisations and of non-official members, a large proportion of whom are engaged in different types of practice. The Committee is a temporary body having as its primary object the drawing up of a scheme under which there might come into being some council or committee representative of every section of medical thought.

Among others present at the dinner were Vice-Admiral Sir W. Norman, Lieutenant-General Sir John Goodwin, Major-General M. H. E. Fell, Sir Robert Morant, Dr. T. H. C. Stevenson, Lady Barrett, Sir Robert Woods, M.P., Sir William Whitla, M.P., Captain W. E. Elliot, M.P., Colonel Nathan Raw, M.P., Dr. Bouverie McDonald, M.P., Dr. R. Murray, M.P., Major J. E. Molson, M.P., Major Waldorf Astor, M.P., Sir W. Hale White, Sir Thomas Oliver, Dr. Jane Walker, Major J. F. Gordon Dill, Professor Kenwood, Dr. G. E. Haslip, and Mr. J. Y. W. MacAlister.

NEW PUBLIC HEALTH REGULATIONS FOR THE CONTROL OF EPIDEMIC DISEASE.—The Secretary of the Local Government Board has circulated to sanitary authorities and medical practitioners a general order (P.H. 2A. 1919) containing the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919, and a circular (P.H. 2) explaining these regulations. Their object is to secure better control over certain epidemic diseases prevalent or threatened at the present time and to increase the facilities for their treatment. The regulations impose the duty of notification by practitioners of any cases of pneumonia occurring under their care, if primary or the result of influenza. All cases of malaria, dysentery, and trench fever must be notified unless the practitioner knows that this has been done in the same district within six months. The regulations in regard to the handling of food by carriers are extended to the enteric fevers, and the duties in relation to lice-borne disease to typhus and relapsing fever. Local authorities may provide medical assistance for any of the diseases named in the regulations, which are to come into force on March 1st.

Medical News.

THE late Lord Rhondda has, among other bequests, left £20,000 to the Cardiff Infirmary.

TUBERCULOSIS SOCIETY.—A conference of tuberculosis officers in the United Kingdom will be held to-day, Saturday, Feb. 15th, at 4 P.M., at the Royal Society of Medicine, 1, Wimpole-street, W., to consider a scheme for the National Prevention and Treatment of Tuberculosis.

Major Thomas Reginald St. Johnston (District Medical Officer and District Commissioner, Fiji) has been appointed by the King to be Colonial Secretary of the Falkland Islands.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting, held on Feb. 3rd, Major-General Sir William B. Leishman, K.C.M.G., C.B., F.R.S., was admitted an Honorary Fellow.—At the same meeting the following were admitted as ordinary Fellows: Dr. Donald MacPhail (Coatbridge) and Dr. John Nairn Marshall (Rothsay).

ASTLEY COOPER PRIZE, GUY'S HOSPITAL.—This prize has not been awarded for 1916-1919 by the trustees, the physicians and surgeons of Guy's Hospital. The subject set was "Gunshot Wounds of the Lungs and Pleura," and the unsuccessful essays will remain at the museum of Guy's Hospital until claimed by the authors by letter to Mr. C. H. Fagge, honorary secretary of the trustees.

RETIREMENT OF PROFESSOR J. B. HELLIER.—Dr. E. O. Croft has been appointed to succeed Professor J. B. Hellier in the Chair of Obstetrics in the University of Leeds. Dr. Hellier's long association with the Leeds Medical School, both as teacher and adviser on questions of policy, has been an important factor in its successful development. The council has passed a resolution expressing its high appreciation of the services he rendered to the University successively as demonstrator, lecturer, professor, and dean of the faculty of medicine.

ROYAL INSTITUTION.—On Tuesday next, Feb. 18th, at 3 o'clock, Captain G. P. Thomson will give the first of two lectures at the Royal Institution on "Aeroplanes in the Great War." On Thursday, Feb. 20th, Professor H. M. Lefroy will give the first of two lectures on "Insect Enemies of our Food Supplies"; the second on Thursday, Feb. 27th, on "How Silk is Grown and Made." The Friday evening discourse on Feb. 21st, at 5.30 o'clock, will be delivered by Mr. A. T. Hare on "Clock Escapements"; on Feb. 28th by Professor J. A. McClelland on "Nuclei and Ions." On Saturday, Feb. 22nd, at 3 o'clock, the Hon. J. W. Fortescue will give the first of two lectures on "The Empire's Share in England's Wars."

THE LATE PROFESSOR GEORGE CAREY FOSTER.—The death is announced of Professor G. Carey Foster in his 84th year. He was appointed to the chair of physics at University College, London, in 1865, from which he retired in 1898. He began his professional career as a student of chemistry, but found the borderland between that science and physics of peculiar attraction, and his work in this direction did much to show how interdependent chemical and physical phenomena are. When we recollect the advances that have been made in bio-chemistry in recent years, we must realise that the study of the physical side of chemistry, or the chemical side of physics, has added considerably to the sum of knowledge on the working of the human machine. Professor Carey Foster will be remembered by British scientific men as one who worked hard to make the British Association for the Advancement of Science a successful organisation in its early days.

LONDON INTER-COLLEGIATE SCHOLARSHIP BOARD: ENTRANCE SCHOLARSHIPS AND EXHIBITIONS.—Thirty-one scholarships and exhibitions of an aggregate total value of about £3075, open to both sexes, and tenable in the faculties of arts, science, medical sciences, and engineering of University College, King's College, East London College, and Bedford College, will be offered for competition on May 13th next. Seventeen medical entrance scholarships and exhibitions of an aggregate total value of about £1550, tenable in the faculty of medical sciences of University College and King's College and in the medical schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital, will be offered for competition on July 15th next. Full particulars on application to the secretary of the board, Mr. S. C. Ranner, M.A., Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Feb. 20th.—Papers:—M. Jean Dufrenoy: Note on the Metabolism of the Glucosides of the Arbutin Group (communicated by Prof. A. K. Cushny).—Dr. S. S. Zilva and Mr. E. M. Wells: Dental Changes in the Teeth of the Guinea-pig produced by a Scurbutic Diet (communicated by Dr. A. Harden).—Dr. W. B. Bullock and Dr. W. Cramer: On a New Factor in the Mechanism of Bacterial Infection (communicated by Prof. W. Bullock).—Major W. J. Tulloch: The Distribution of the Serological Types of *B. tetani* in Wounds of Men who received Prophylactic Inoculation, and a Study of the Mechanism of Infection in, and Immunity from, Tetanus (communicated by Major-General Sir David Bruce).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Tuesday, Feb. 18th.

SPECIAL GENERAL MEETING OF FELLOWS, at 5 P.M.

To consider and, if approved, to confirm the following Resolution passed by the Council:—

"That the necessary steps be taken to increase the Subscription of Fellows living or practising within one mile of the Society's House from Three Guineas to Five Guineas."

Ballot for Election to the Fellowship. (Names already circulated.)

Wednesday, Feb. 19th.

SOCIAL EVENING: at 8.30 P.M.

Dr. Norman Moore (President, Royal College of Physicians) will discourse on "English Morbid Anatomists."

MEETINGS OF SECTIONS.

Wednesday, Feb. 19th.

HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.

Paper:

Mrs. Singer: A Survey of the Medical Manuscripts of the British Isles.

Friday, Feb. 21st.

OTOLOGY (Hon. Secretaries—J. F. O'Malley, H. Buckland Jones): at 5 P.M.

Paper:

Mr. J. S. Fraser: The Radical and Modified Radical Mastoid Operation.

Mr. Hunter Todd: Accidental Injury of Lateral Sinus during the Operation of Mastoidotomy.

Members are requested kindly to send cases typical of the operations described, at 4 P.M.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Robert Knox, Walter J. Turrell): at 8.30 P.M.

Paper:

Mr. W. Sampson Handley: On the Mode of the Spread of Cancer in Relation to X-Ray Treatment.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

ROYAL STATISTICAL SOCIETY, 9, Adelphi-terrace, Strand, W.C. 2.

TUESDAY, Feb. 18th.—5.15 P.M., Paper:—Capt. M. Greenwood, R.A.M.C.(T.): Problems of Industrial Organisation.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Feb. 21st.—5.30 P.M., Papers:—Dr. J. A. Arkwright, Mr. A. Bacot, and Mr. F. M. Duncan: The Minute Bodies (Rickettsia) found in Association with Trench Fever, Typhus and Rocky Mountain Spotted Fever.—Sir Stewart Stockman: Pathology and Epizootiology of Louping-ill, with Special Reference to Chromatin Bodies in the White Corpuscles.—Mr. C. Bonne (Paramaribo) (read by Dr. Bagshawe): Has Emetine any Influence on the Schistosomes?

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, in the Theatre of the College, Lincoln's Inn Fields, W.C.

MONDAY, Feb. 17th.—5 P.M., Prof. E. S. Schlesinger: The Treatment of Compound Fractures and other Severe Injuries of the Upper Limb.

WEDNESDAY.—5 P.M., Arrie and Gale Lecture:—Mr. E. M. Corner: The Nature of Scar Tissue and Painful Amputation Stumps.

FRIDAY.—5 P.M., Arrie and Gale Lecture:—Lieut.-Col. E. M. Cowell, D.S.O., R.A.M.C.(S.R.): The Initiation of Wound Shock and its Relation to Surgical Shock.

POST-GRADUATE COLLEGE, West London Hospital, Hammermith-road, W.

Special Eight Weeks' Course of Post-Graduate Instruction (First Week):—

MONDAY, Feb. 17th.—10 A.M., Dr. S. Pinchin: Demonstration on Medical Cases in the Wards. 2 P.M., Operations. Mr. Baldwin: Surgery. 3 P.M., Mr. B. Harman: Diseases of the Eye. 4.30 P.M., Mr. Addison: Surgery. 5.30 P.M., Venereal Diseases Clinic.

TUESDAY.—2 P.M., Operations. Mr. Pardee: Genito-Urinary Diseases. 3 P.M., Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. 4.30 P.M., Mr. T. Gray: Surgery. 5.30 P.M., Venereal Diseases Clinic.

WEDNESDAY.—10 A.M., Operations on the Throat, Nose, and Ear. 2 P.M., Operations. Col. Armour: Surgery. 3 P.M., Dr. Simson: Diseases of Women. 4.30 P.M., Dr. Beddard: General Medicine. 5.30 P.M., Venereal Diseases Clinic.

THURSDAY.—2 P.M., Operations. Dr. Saunders: General Medicine. 3 P.M., Dr. S. Pinchin: General Medicine. 4.30 P.M., Dr. G. Stewart: Diseases of the Nervous System. 5.30 P.M., Venereal Diseases Clinic.

FRIDAY.—2 P.M., Operations. Dr. Morton: Radiography. 3 P.M., Dr. Pernet: Diseases of the Skin. 4.30 P.M., Major Pritchard: Clinical Pathology. 5.30 P.M., Venereal Diseases Clinic.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.

Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—

WEDNESDAY, Feb. 19th.—5.30 P.M., Lecture III.:—Prof. F. G. Hopkins: Vitamines, Unknown but Essential Accessory Factors of Diet.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), at the Lecture Theatre of the Medical School, King's College Hospital, Denmark Hill, S.E.

Course of Four Lectures on Malaria. Microscopic specimens and lantern slides will be shown at this lecture.

FRIDAY, Feb. 21st.—12 noon, Lecture IV.:—Col. Sir Ronald Ross, K.C.B., K.C.M.G., F.R.S. Officers and Men of the Royal Army Medical Corps are invited to attend.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After war Conditions:—

WEDNESDAY, Feb. 19th.—4 P.M., Mr. P. C. Varrier-Jones: The Future of the Tuberculosis Problem.

Vacancies.

For further information refer to the advertisement columns.

Birkenhead Borough Hospital.—Jun. H.S. £170.
Birkenhead and Wirral Children's Hospital, Woodchurch-road.—H.S. Brighton, Royal Sussex County Hospital.—Jun. H.S. and Asst. H.S. £280.
Burton-upon-Trent County Borough.—Asst. M.O. £350.
Coventry and Warwickshire Hospital.—Res. H.P. £200.
Derbyshire County Council.—Venereal Diseases Officer.
Dorchester, Dorset County Asylum.—Second Asst. M.O. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
Fulham, Metropolitan Borough.—Female Asst. M.O. £506.
Glasgow Eye Infirmary.—Res. Med. Supt. and H.S. £300.
Gravesend Hospital, Kent.—Locum H.S. £1 1s. per day.
Herefordshire General Hospital.—Hon. P.'s and Hon. S.'s.
Huddersfield Royal Infirmary.—Jun. H.S. £100.
Lancaster County Asylum.—Temp. Asst. M.O. 7 gs. per week.
Leeds Hospital for Women and Children.—Hon. Asst. S.
Leicester Royal Infirmary.—Hon. S. Also H.S. £250.
Liverpool, Brownlow Hill Poor Law Hospital.—Res. Asst. M.O. £300.
Liverpool Eye and Ear Infirmary.—Hon. Asst. Surgeons.
London County Mental Hospitals, (a) Bexley, Kent, (b) Long Grove, Epsom, Surrey.—Temp. Asst. M.O. 7 gs. a week.
Northampton General Hospital.—Jun. H.S. £156.
Maldstone, Kent County Ophthalmic Hospital.—Ophth. S.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. £250.
Middleton-in-Wharfedale Sanatorium, nr. Ilkley.—Asst. Res. M.O. £325.
Reading, Royal Berkshire Hospital.—H.P. £250.
Rousay and Eglishay, Orkney, Parish of.—M.O. £300.
Royal London Ophthalmic Hospital, City-road, E.C.—Asst. S. Also Sen. H.S. £150.
Royal National Orthopaedic Hospital.—Res. H.S. £100.
Serbia Hospital.—S.
Shantung Christian University Medical School (Tsinanfu, N. China).—Medical Missionaries.
Sheffield Royal Hospital.—Cas. O. £130. Also Asst. H.P. £120.
Smethwick County Borough.—M.O. H. £200.
Southend-on-Sea County Borough Education Committee.—School Dentist. £370.
Stoke-on-Trent County Borough.—Temp. Tuberc. O. £550.
Sunderland Royal Infirmary, Children's Hospital.—Res. M.O. £200.
Taunton, Taunton and Somerset Hospital.—Sen. H.S. £250.
Tunbridge Wells General Hospital.—H.S. £160.
THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Wolston (Warwick), Clevedon, Sheffield, Ballyward, and at Braemar.

Births, Marriages, and Deaths.

MARRIAGES.

MACDONALD-SPEIRS-ALEXANDER.—On Feb. 1st, at St. Paul's Church, Portman-square, W., Sydney Gray MacDonald, M.A., M.B., B.C. Cantab., F.R.C.S., to Mary Martineau Speirs-Alexander (May), widow of Captain A. R. Speirs-Alexander, I.M.S.

DEATHS.

ARCHER.—On Feb. 10th, at his residence at Barnes, after a short illness, Thomas Archer, M.D., O.M. McGill, L.R.C.P. & S. Edin.
BELL.—On Feb. 3rd, at Hastings, James Vincent Bell, M.D., F.R.C.S., of Rochester, aged 80 years.
KHORY.—On the 5th Feb., at 249, Hackney-road, E.2, Susan, the beloved wife of Dr. K. N. Khory, after a long illness.
KITSON.—On Feb. 6th, at The Lodge, Beaminster, Dorset, Francis Parsons Kitson, M.R.C.S., L.R.C.P., aged 54.
NESHAM.—On Feb. 5th, at Ellison-place, Newcastle-upon-Tyne, Robert Anderson Nesham, F.R.C.S., L.R.C.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

PHYSIOLOGY AND THE FOOD PROBLEM.

LAST year at King's College a series of free lectures were delivered by well-known professors from representative Universities of the country on the important part which zoology had played in the service of the Empire during the war. The series is being continued this year with the object of showing how the needs of the nation are being served by physiology, and on Feb. 5th Professor W. D. Halliburton, F.R.S., delivered the introductory address, taking for his text Physiology and the Food Problem. Beginning with a general survey of the relation of physiology to daily life, Professor Halliburton said that hygiene and pathology were the direct practical outcome of physiological knowledge. Science had contributed to the other side of warfare, but the physiologist and the physiological chemist had stepped in to alleviate distress; for example, the deadly chlorine gas had become in their hands the basis of new antiseptics. During the war medical research had progressed rapidly, and this progress ought not to be allowed to slacken during the period of reconstruction. Instead of spending millions a day on war, the Government must be prepared to expend a few thousands a year in the endowment of research. For the first time in the history of war biologists and physiologists had been called upon to do national work, and the present Cabinet, although it contained no physiologist, had anatomists at the head of two important departments—Dr. Addison and Sir Auckland Geddes—a good augury that science at last was coming into its own. The Medical Research Committee had issued a medical supplement giving extracts from foreign medical publications relating to the work done in other countries during the war, and he hoped that these supplements would be continued, and would increase in usefulness during the time of peace. But, he added, such publications require State help. Other scientific committees had been formed, not the least important of which was the Food War Committee of the Royal Society. Principles had been laid down upon which food legislation should proceed, and numerous statistics had been collected which would be of incalculable value to those who would in the future be engaged in the administration of food. Much investigation had been done, but much remained to be discovered, especially as regards the effect of the various types of food in producing energy for different kinds of work. As an instance of the investigations which had been carried out, Professor Halliburton said that about the middle of 1917 the fat shortage became serious because so much was being used in the manufacture of explosives. After the extraction of glycerine from the fat the fatty acids remained, and the question arose as to whether it would be possible to employ these acids for the various purposes for which fats were previously used. The Royal Society Subcommittee was asked whether these substances could be employed as the component part of some butter substitute. The first experiments were made upon rats. These animals were comparatively short-lived, and if they were fed on a particular diet for a few weeks or months it was equivalent to feeding a long-lived animal, such as a man, over a longer period. On a diet of fatty acids the rats thrived and multiplied, and it remained to try the effect of the food upon man. Professor Noel Paton obtained voluntary assistants for the test and the experiment proved a complete success. There was as yet no need for a diet of this kind, but in case of emergency a source of a supply for fat was here indicated. A curious fact came out in these experiments. It was found that if an animal were fed upon fatty acids they passed into the blood stream as fat, the animal making its own glycerine, possibly from sugar. Owing to British enterprise, the manufacture of margarine had now greatly increased, this success being, to a large extent, due to the fact that British firms had been able to give it an agreeable flavour. The prejudice against its use had practically died out, but it must be remembered that the great mass of margarine was made from vegetable fats. Animal fats had the same energy value as butter, and animal margarines, with few exceptions, contained vitamins, which were not present in the more palatable vegetable margarines. If, therefore, the children of the poor lived exclusively on vegetable margarine we should be running a great risk of becoming a C3 nation. Although vegetable oils did not contain vitamins, green vegetables did, but they were not suitable as a food for infants, and if there was a shortage of milk the babies must have the lion's share. A pure milk-supply was essential. This had been secured in America and Australia, and it was time that the mother country protected the lives of her children in the same way. He hoped that under a Ministry of Health

the question would no longer be neglected. Pure milk would save the lives of hundreds of thousands of infants. Other questions which came before the Royal Society Subcommittee related to the methods to be employed for saving fat and to the value of cocoa butter, which, though it was quite good, was perhaps not so digestible as ordinary butter. The Government had some thousands of tons of lanoline in stock, and information had been asked for as to whether this could be used for food. It had an entirely different chemical constitution from fat; it was not poisonous, but was quite useless for food on account of its non-digestibility. The object of the lecture was, Professor Halliburton said, to illustrate the work which had been done by subcommittees in regard to bread, meat, &c., which work formed the backbone of legislation and enactments by the food controllers.

Sir Alfred Keogh, who presided, thought that this war was the only one in which, in all its departments, the Government had endeavoured to avail itself of the resources of science. He would like to point out that the physiologist had been doing work for the Army for a great many years. After the South African War the ration of the British soldier was tested and found to be deficient, the men losing weight and spirits when on the march. On the advice of the physiologist additions of jam, cheese, and bacon were added, to increase the fat, protein, and carbohydrate content, with the result that a satisfactory ration was obtained. This ration was used throughout the present war, and, in his opinion, was largely instrumental in bringing about that absence of disease which had been so noticeable.

A DROPPED-FOOT APPLIANCE.

Mr. Frank Jenner has been prompt in meeting our criticisms on his dropped-foot appliance (THE LANCET, Jan. 25th, p. 142). He has submitted to us an improved apparatus in which the hooks are considerably strengthened and the strap which takes the resistance to the springs is placed round the heel of the boot instead of pressing unduly upon the Achilles tendon.

HEALTH AND ALLOTMENTS.

THE tilling of the soil and the tending of cattle together form one of the oldest occupations of man and one of the healthiest, provided the conditions of labour are propitious; for it must be remembered that undue exposure to inclement weather does not conduce to health. Other things being equal, work in the open air tends to prolong life, and in spite of worries over bad harvests, failure of crops, and anxiety as to the state of the weather, the farmer and the gardener are notoriously healthy and long-lived. All men cannot be farmers or gardeners, but very many may have the opportunity of cultivating a garden, however small, if they will; the war has made the increase of the allotments a national necessity, and we hope this will become a permanent feature of English life. Apart from the undoubted physical benefits which result from work in the open air, the allotment is a place eminently suited to exorcise the worries induced by the rush of modern business life, by quiet contemplation, or congenial intercourse with sympathetically inclined plot-holders; the dispersion of worry is a secret of long life more potent than drugs. The various occupations of digging, hoeing, and raking, the general care of the land, and the taking home of produce bring into operation all the muscles of the body, while the worker has every inducement to rise early and partake of the invigorating morning air. We are only concerned here with the medical aspect of the question, but it might easily be shown that mentally and morally the allotment has immense possibilities for training and improving the people, whatever may be their position in the social scale. On the financial side also there can be no doubt that "it pays." We therefore heartily endorse the suggestion of our contemporary, the *Architects and Builders' Journal*, that "provision for allotments should be compulsory for every lay-out of a suburban estate," whether intended for the working class or the business man.

QUEEN MARY'S NEEDLEWORK GUILD.

ONE of the first of the demands of the war was for clothing for sailors and soldiers, for naval and military hospitals, and for the families of fallen sailors and soldiers who might suffer. This was immediately recognised with womanly intuition on the outbreak of hostilities by Her Majesty the Queen, who formed the Needlework Guild which bears her name. For four and a half years a devoted band of helpers have been working at Friary Court, St. James's, often for 10 or 11 hours a day, which has throughout remained the central clearing-house of the Guild. From a first weekly consignment of 5000 articles of clothing to the regiments and hospitals in the early days of the war the numbers went up until during one week 586,000 articles were despatched. More than 14 million articles of various kinds have passed through the packing departments of Friary Court, not only clothing but comforts of almost every description. This,

however, represents only a part of the total, for many of the 620 branches sent their work direct to local hospitals and county regiments. The membership of the Guild came to exceed a million, and branches were formed all over the world. The work has now been discontinued, but it is hoped to utilise the remarkably successful organisation in the interest of discharged sailors and soldiers. The orthopaedic branches of the Guild still remain in active working.

THE TREATMENT OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—Considerable interest has been aroused in the method of treating adenoids originated, I understand, by Mrs. Handcock and advocated by Dr. Isabel Ormiston in your issue of August 24th, 1918. In her paper Dr. Ormiston refers to a sternutatory powder composed of iris root and hard soap.

The roots of several varieties of iris are used—more or less—medicinally, including that known commonly as orris root. Would any of your readers oblige by communicating the exact prescription for the powder, or by acquainting me with references to further details of the method of treatment?

I am, Sir, yours faithfully,

Feb. 6th, 1919.

M.D.

Communications, Letters, &c., to the Editor have been received from—

- A.—Col. J. G. Adams, A.D.M.S.; Messrs. Allen and Hanbury, Ltd.; Dr. D. K. Adams, Glasgow.
B.—Dr. A. B. Blackburn, Burnmouth; Capt. F. W. Baker-Young; Mr. H. Blakeway, Lond.; Dr. P. G. Byrne, Clonmel; Dr. E. Donaldson, Reading; Major-General Sir D. Bruce, K.C.B., A.M.S.; Dr. H. Brown, Lond.; Messrs. Butterworth and Co. (India), Ltd., Calcutta; Board of Agriculture and Ministry of Food, Lond.; Joint Committee of Prof. Dr. G. Breccia, Vicenza; Messrs. P. Blackiston's Son and Co., Philadelphia; Lt.-Col. H. N. Barnett, R.A.M.C.; Dr. B. G. M. Baskett, Rayleigh; Dr. E. A. Barton, Lond.; Capt. H. H. Butcher, R.A.M.C.
C.—Dr. C. Coombs, Bristol; Mr. C. A. Clouting, New York; Messrs. Cassell and Co., Lond.; Sister J. Church, Lond.; Capt. J. Campbell, R.A.M.C.; Joint Board of Scientific Societies, Lond.; Dr. A. C. Coles, Bourne-mouth; Dr. A. J. Chalmers, Khartoum; Dr. H. L. Collis, Lond.
D.—Dr. L. Drage, Hatfield; Dr. H. H. Dale, Lond.; Dr. V. Dickinson, Lond.; Dr. H. Dickinson, Lond.; Dr. J. R. Day, Lond.; Dr. J. F. H. Dally, Lond.
E.—Dr. H. A. Ellis, Middlesbrough; F. Flat Press Bureau, Lond.; Major E. R. Fothergill, R.A.M.C.; Mr. E. R. Flint, Leeds; Lt.-Col. F. E. Fremantle, R.A.M.C.(T.); Mr. C. H. Fagge, Lond.
H.—Dr. F. Herniman-Johnson; Mr. W. Hurst, Glasgow; Mr. C. R. Hewitt, Lond.; Dr. O. W. Hutt, Brighton; Mr. N. B. Harman, Lond.; Mr. C. J. Heath, Lond.
I.—Indian Science Congress, Bombay, Hon. Sec. of; Insurance Practitioners' Associations of Camberwell, Lambeth and South-west.
J.—Major W. Johnson, R.A.M.C.; Dr. G. P. Joy, Lond.; Mr. R. E. Jones, Llanberis.
L.—Mrs. Leggett, Woodford Green; Local Government Board, Lond.; Dr. O. Leyton, Lond.; Messrs. Lawson and Co. (Bristol), Ltd., Bristol; Prof. F. de Lapersonne, Paris; Dr. N. P. Laing, Llandudno; London Inter-Collegiate Scholarships Board, Sec. of; Mr. E. M. Little, Lond.; Miss E. Lowry, Lond.
M.—Mr. L. Mooschnik, Lond.; Capt. J. Miller, R.A.M.C.(T); Dr. G. A. Macdonald, Wokingham; Mr. C. MacMahon, Lond.; Lt.-Col. C. S. Myers, R.A.M.C.; Medico-Psychological Association of Great Britain and Ireland; Mr. A. P. Melville, Edinburgh; Sir W. Milligan, Manchester; Dr. R. F. Moorhead, Lond.
O.—Dr. H. P. Orchard, Lond.; Mr. J. Offord, Lond.
P.—Prof. A. Pellegrini, Chiari; Mr. C. J. Pilling, Philadelphia; Mr. J. A. P. Perera, Lond.; Mr. D'Arcy Power, Lond.; Major J. Phillips, R.A.M.C.; Dr. J. Pearce, Lond.
R.—Royal College of Surgeons of England, Lond.; Royal Institute of Public Health, Lond.; Royal Academy of Medicine in Ireland; Capt. C. H. L. Rixon, R.A.M.C.; Royal Institution of Great Britain, Lond.; Capt. J. Ryle, R.A.M.C.(S.R.); Mr. H. Rundle, Southsea; Royal Society, Lond.; Royal Statistical Society, Lond.
S.—Prof. H. G. Slesinger, Lond.; Dr. F. Shaw, Manchester; Messrs. Sampson, Low, Marston, and Co., Lond.; Mr. E. M. Savery, Lond.; Mr. G. W. L. Short, Lond.; Dr. C. R. Sandiford, Chelsea; Dr. B. C. Solomons, Dublin; Lt.-Col. H. Smith, I.M.S., Amritsar; Major M. Sinclair, R.A.M.C.; Capt. E. N. Snowden, R.A.M.C.(T); Society of Tropical Medicine and Hygiene, Lond.; Mr. R. A. Stoney, Dublin; Dr. T. Sheenan, Aberdeen; Dr. A. Savill, Lond.
T.—Maj.-Gen. Sir A. B. Tulloch, K.C.B., C.M.G.; Dr. L. Thatcher, Edinburgh; Sir St. Clair Thomson, Lond.; Tuberculosis Society, Lond.; Hon. Sec. of.
U.—University, Leeds, Sec. of.
V.—Rev. R. Verdonment, Denton, Texas; Major F. N. Vellacott, R.A.M.C.(T.C.); Capt. G. Viner, R.A.M.C.
W.—The Welsh Outlook, Cardiff; Lt.-Col. J. H. T. Welsh, I.M.S. (retd.); Dr. S. A. K. Wilson, Lond.; Dr. E. Watt, Edinburgh.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

THE LANCET, AUGUST 24TH, 1918.

THE Manager of THE LANCET is greatly obliged to those gentlemen who have kindly returned to him their copies of the issue of August 24th, to enable him to replace copies for libraries and institutions in India and the East which were lost at sea owing to enemy action.

The Hunterian Oration

ON

BRITISH MILITARY SURGERY IN THE TIME OF HUNTER AND IN THE GREAT WAR.

Delivered before the Royal College of Surgeons of England on Feb. 14th, 1919, the Anniversary of Hunter's Birth,

By SIR ANTHONY BOWLBY, K.C.M.G., K.C.V.O., C.B.,
TEMP. MAJOR GENERAL, A.M.S.; CONSULTING SURGEON, BRITISH ARMIES
IN FRANCE; SURGEON IN ORDINARY TO H.M. THE KING;
SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

FROM PARÉ TO HUNTER: LACK OF PROGRESS.

In the year 1792 John Hunter finished the last of his works and dedicated it "To the King."

"May it please your Majesty.

In the year 1761 I had the honour of being appointed by your Majesty a surgeon on the staff in the expedition against Belleisle.

In the year 1790 your Majesty honoured me with one of the most important appointments in the Medical Department of the Army, in fulfilling the duties of which every exertion shall be called forth to render me deserving of the trust reposed in me and not unworthy of your Majesty's patronage.

The first of these appointments gave me extensive opportunities of attending to gunshot wounds, of seeing the errors and defects in that branch of military surgery, and of studying to remove them. It drew my attention to inflammation in general, and enabled me to make observations which have formed the basis of the present Treatise. That office which I now hold has afforded me the means of extending my pursuits and of laying this work before the public."

This dedication is dated "Leicester Square, May 20th, 1792," although Guthrie states that "the work was not published until 1794"—i.e., the year after Hunter's death; but in spite of the fact that more than 30 years had passed since the period of Hunter's active service before he published his treatise, yet his interest in what he had seen at Belleisle remained so keen and his description of individual cases is so vivid that it might easily be supposed he was describing events of very recent occurrence. The whole "Treatise" is quite short, and occupies only 56 pages in the octavo edition of 1828.

In the "Roll of Commissioned Officers in the Medical Service of the British Army," by the late Colonel William Johnston, C.B., and published in 1917, Hunter's record reads as follows:—

"John Hunter, Surgical Staff, Great Britain, 30th October, 1760. Half pay, 1761. Full pay, Assist. Surgeon General, 4th January, 1789. Surgeon-General and Inspector of Regimental Hospitals, 17th March, 1790. Died October, 1793. Belleisle, 1761. Portugal, 1762."

An interesting fact which is not commonly known is supplied in this brief statement, for it appears that Hunter had acted as "Assistant Surgeon-General" for four years before his appointment as Surgeon-General.

At the time when Hunter went to Belleisle just 200 years had passed since Ambroise Paré had published his collected works, and it is not too much to say that military surgery had not advanced materially since his death in 1590. This lack of development was certainly not due to lack of opportunity, for the 200 years had been years of war, and firearms had quite replaced the arrows and bolts which in Paré's day were still frequent causes of injury, in spite of the then recently invented culverins and arquebuses.

A hundred years later than Paré, the great English surgeon, Wiseman, had written the most important treatise published since the time of the French master, and in the same year that saw the attack on Belleisle, Ranby, who had attended King George the Second in his Flanders campaigns, published a little book on gunshot wounds.

In France the successor to Paré was Le Dran, who in 1740 produced a considerable work on gunshot wounds based largely on Paré.

It would appear that the authors I have here enumerated were the only guides to whom Hunter could have turned for help and counsel when he set out to the wars. It is, however, noteworthy that he does not refer by name in his treatise to any surgical author at all, and that on the other hand he notes—

"Little has been written on the subject and what has been written is so superficial that it deserves but little attention."

It was, indeed, left for the following century to provide at its very commencement the men whose work, expanding and extending that of Hunter, laid the foundations of the military surgery of the nineteenth century, and the names of Larrey in France and Guthrie in England will for ever be associated in this connexion.

HUNTER'S WAR EXPERIENCES.

It is of interest to glance for a moment at the wars of John Hunter's life-time.

No. 4982

Marlborough's campaigns had ended in 1711, before Hunter's birth, after his successful, but fruitless, attack at Arleux on the French line of trenches which lay across France from Namur to the sea at Montreuil, but Hunter was a youth of 17 years when, in the campaign of 1745, the battle of Fontenoy was fought. From that time until shortly before the attack on Belleisle there was a lull in the fighting and again, after 1763, there ensued a long period of peace, as far as England was concerned, except for the wars in America and India. It thus happened that the opportunity for further work in military surgery was lacking, and Hunter's careful notes of his cases made in 1761 remained without the additions which further wars would no doubt have provided.

His experience of military surgery in the field was thus limited to the Belleisle and Portuguese expeditions, and a brief description of these little known naval and military operations in which Hunter served will not, I think, be out of place. To Mr. A. D. Cary, the librarian of the War Office, I am much indebted for some of the following details.

Belleisle.

The first of these expeditionary forces consisted of about 10,000 troops under the command of General Hodgson, and was escorted by a powerful squadron of eight ships of the line and several frigates under Admiral Keppel. Its object was the capture of the island.

Belleisle is off the coast of Brittany and is about 12 miles in its greatest length and about 5 miles in its greatest width. It is surrounded by precipitous cliffs and forms a natural fortress. The chief town was on the northern edge of the island and was protected by a citadel, garrisoned by about 4000 men under the command of the Chevalier de Saint Croix.

According to the French historian, this garrison was very insufficient, and "Saint Croix, in order to deceive the British as to its numbers, mounted 50 volunteers on farm horses of the island, his efforts being admirably seconded by the female population. The women asked permission to help in this deception, and formed a squadron clothed in red capes. Those who had no horses mounted cows." (Waddington's "La Guerre de Sept Ans.")

The first attack took place on April 8th, and after an initial success, resulted in the repulse of the British with the loss of about 450 killed, wounded, and prisoners. Of these there were rescued 75 British wounded, and there were also captured 54 wounded Frenchmen. All these appear to have been taken for treatment to the ships. A second attack on April 22nd was successful in occupying the island and driving the defenders into the citadel, where they withstood a siege for nearly two months, and finally surrendered on June 7th.

The French estimate of their own losses was 200 killed and 450 wounded, while Fortescue states that "the losses of the British throughout the whole of the operations were about 700 killed and wounded," and he adds: "Thus was Belleisle secured as a place of refreshment for the fleet." It was restored to France on the conclusion of peace in 1763.

Portugal.

After the capture of Belleisle Hunter remained as one of its garrison for nearly a year, for it was not until the summer of 1762 that the opportunity came for some of the troops to embark on an expedition to Portugal, and there is no doubt that he accompanied this force.

The explanation of this event is thus described by Fortescue:—

"The Spaniards on the pretext of Portuguese friendship with England, in April 1762, invaded Portugal, overran that country as far as the Douro from the North, and threw another force against Almeida from the East. The injured kingdom appealed to England for help, and in May orders were sent to Belleisle for the departure of four regiments of infantry together with a detachment of the Sixteenth Light Dragoons to Portugal. Two more regiments were added from Ireland, bringing the total up to about 7000 men." (Fortescue's "History of British Army," vol. II., p. 546.)

The force stood on the defensive to cover Lisbon and the line of the Tagus, but on August 27th Brigadier-General Burgoyne with 400 troops, and the Grenadier company of the Buffs surprised and annihilated a regiment of Spanish infantry and took Valencia with very few casualties.

On Oct. 4th another attack again took the enemy by surprise and resulted in the capture of six guns and other booty, with great loss to the Spaniards, but at the cost of only one man killed and eight wounded to the British. The results of this expedition are thus summed up in the "Historical Records of the Third Foot" (The Buffs):—

"This advantage being obtained at a critical moment was attended with important consequences; the enemy was disheartened, the season for military operations was far advanced, heavy rains fell, the roads were destroyed, and the Spaniards fell back to their own frontiers. Thus Portugal was saved by British valour and British skill."

Such, in brief, were the two expeditions in which Hunter saw active service, and it would appear that in Portugal there were very few casualties.

It is probable that in the Belleisle expedition the wounded numbered about 500, although by no means all of them could have been under Hunter's care. It is, however, likely that some of the patients were kept on the island until they had recovered, and so were under treatment for a long time.

It is also evident that a certain number of the French wounded were left to the care of the British surgeons, for it was provided by Article XI. of the capitulation that "the officers and soldiers who are in hospital in the town and citadel shall be treated in the same manner as the garrison, and after their recovery shall be furnished with vessels to carry them to France."

Hunter's Position at Belleisle.

The actual position occupied by Hunter during his stay on the island has hitherto been somewhat uncertain. I have;

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however, been fortunate enough to be supplied by Professor F. Wood-Jones with a letter which shows that Hunter was not merely one of a surgical staff, but was in charge of the hospital, for in addition to his appointment as "staff surgeon," he is described as the "Deputy Purveyor," and in that capacity he was supplied by the Government with money to be spent on the hospitals by himself. The letter is dated April 12th, 1762, and was written only a short time before the forces at Belleisle were embarked for Portugal. It is as follows:—

"Belleisle, 12 April, 1762.

SIR,—The Hospital here being in want of money as appears by a letter sent to me this day by Mr. John Hunter, the Deputy Purveyor thereof, a copy of which is herewith annexed, I have in compliance therewith issued my warrant to you of the same date as this letter for the sum of Two Hundred Pounds payable to the said Mr. John Hunter for the use of the said Hospitals, without deduction, but upon account, and do hereby direct and desire (as the Lords of the Treasury have not issued any money to you for the contingencies of this garrison) that you will pay the same out of the money which you have in your hands for the subsistence of the Troops here.

I am, Sir,

Your most humble servant,

To Charles Bembridge, Esq., H. A. LAMBART.
Deputy Paymaster-General to Forces at Belleisle.

An examination I have made of the "Journals of the House of Commons" has disclosed other payments as follows:—

"December 27th, 1761, to John Hunter, Esq., for the use of the Hospital £300.0.0."

"Mar. 10th, 1762, to John Hunter, Esq., for the use of the Hospital £100.0.0."

"April 12th, 1762, to John Hunter, Esq., for the use of the Hospital £200.0.0."

It seems, therefore, that Hunter was both the staff surgeon and also the chief administrator of the British Hospital at Belleisle. But, small though the number of wounded was in those days when compared with the tens of thousands of the present day, it is evident that at Belleisle it was sufficiently large to provide Hunter with food for much thought and study. He had no other duty except to care for his soldier patients, no other problems to solve save those of gunshot wounds, and we can picture him on the sea-girt cliffs pondering over the questions which presented themselves to his busy brain and shaping the newly born thoughts of inflammation suggested by his first experience of war.

It seems to me very possible that we owe more to that period of contemplation on the remote island of Belleisle than has ever yet been guessed, and as we find Hunter himself saying of his experience of war 30 years later, "it drew my attention to inflammation in general," we shall not be far wrong if we conclude that the germs of much of his most important later work were brought to life in the quietude which followed the siege and capture of the citadel.

THE MILITARY MEDICAL SERVICES IN THE EIGHTEENTH CENTURY.

At the time of Hunter's appointment as Surgeon-General in 1790 the Army had but one Physician-General and one Surgeon-General, who were elected from the ranks of eminent civilian practitioners of the day, and it was the duty of the first to supply physicians to the Army and of the second to examine all candidates for appointments as surgeons. The Surgeon-General also recommended surgeons and "surgeons' mates" for appointments to hospitals and regiments.

In times of peace these duties were not arduous, for the standing Army was small, but when in 1793 we were obliged to raise ever-increasing armies for the war in Flanders it became impossible to provide the necessary surgical staffs. Hunter must have had many anxious hours at a time when his health was failing, for his own death occurred within six months of the declaration of war. I will therefore ask you to consider the condition of the Medical Services in the eighteenth century and the difficulties which were inherent in supplying the troops with efficient medical officers.

Inadequate Pay and Status.

The Army Medical Service both before and during Hunter's lifetime left very much to be desired, and the pay and status were such that they offered no inducement to men of skill or learning.

John Woodall, writing in 1639 in his book called "The Surgeon's Mate," says: "And for the surgeons in his Land service he (The King) alloweth to the Surgeon-Major of the whole camp five shillings a day. Also his Majesty alloweth to each Surgeon two shillings and sixpence a day, which is three pounds and fifteen shillings a month, and to each Mate three pounds a month. . . . And further His Highness hath referred to the ancient Masters and Governors of our Society (i.e. the company of

Barber-Surgeons) the pressing of all Surgeons and Surgeons' Mates or servants to Surgeons and Barbers." It is therefore evident that, as the pay was not a sufficient inducement, surgeons were "pressed" or forced, as seamen were forced by press-gangs, to join the service when war called for surgical help.

More than a hundred years later, and consequently after Hunter's experience at Belleisle, the inducements to serve were still not improved, for in 1787, only three years before Hunter's appointment as Surgeon-General, Robert Hamilton wrote: "Each regiment is allowed a Surgeon, as he is termed, and a Surgeon's Mate. Their business is to attend to the diseases of the men at all times whenever it is judged necessary. For this service the surgeon is allowed four shillings a day; the mate three and sixpence. But out of this are levied from them considerable duties; from the surgeon a shilling, and from the mate sixpence a day. This makes their subsistence equal, so that each is limited to a guinea a week, and on this they must subsist as well as they can."

The pay of John Hunter as staff surgeon is uncertain, but was probably ten shillings a day, and he also had another ten shillings as "Deputy-Purveyor." He joined the Army for the Belleisle Expedition chiefly in order to obtain a change of duties and surroundings after illness and overwork in London; when the war came to an end he returned to his studious life, and started practice in Golden-square at the age of 35.

It is evident that one of the chief causes of inefficiency in the medical service in the eighteenth century was the custom of employing ignorant and often uneducated men as "surgeons' mates."

The mate was the assistant of the surgeon and was usually unqualified, except that he might have been a surgeon's apprentice in civil practice. Some few, it is true, were well-educated men who had attended lectures on anatomy, surgery, and medicine, but all of them were only "warrant officers" and did not hold commissions.

So long as there was no war to make demands for an increase of the staff of surgeons the evil was not very great, but in 1793, on the outbreak of war with France, "an increase of the hospital establishments of the Army became necessary, and the pay of 'hospital' mates being higher, many 'regimental mates' transferred to the hospitals as 'hospital mates.' An increase in the number of surgeons led to the promotion of many regimental mates, and many also purchased commissions." (Colonel Johnstone.)

The result of this was, first, that many of the men who now held commissions as surgeons were very ignorant fellows, and second, that the places of the promoted mates were filled by men of low class, most of whom had no surgical knowledge at all, but were yet in control of the treatment of hundreds of men. For example, we read that on one occasion "five hundred invalids were embarked from Arnheim in barges under the care of a single surgeon's mate without sufficient provisions and without even straw to lie on." (Fortescue: "British Campaigns in Flanders.")

Bad State of Medical Service in 1793-4.

But, not only was the pay and status of the surgeons bad, the administration of all the Army was on a thoroughly unsound footing, for, after Marlborough's time its efficiency, or the reverse, depended on the Minister in power in England for the time being.

Military history shows that in the campaigns of 1793 and 1794, just when Hunter's work was published, mismanagement and incapacity in the Government had reduced the whole Army to a state of inefficiency and chaos. Thus, Fortescue writes: "The men were imperfectly disciplined, there were no efficient company officers to look after them; no efficient colonels to look after the company officers; no generals to look after the colonels. . . . No effort was made to clothe recruits, who received a linen jacket and trousers, and many were sent on active service in this dress, without waistcoat, drawers, or stockings." (Fortescue, p. 372.) So bad indeed was the supply of army clothing that great costs were supplied to some regiments by public subscription. The medical service was such as might be expected when the Army, as a whole, was in this condition, and the state of affairs in July, 1794, is described as follows:—

"But the very worst department of all was that of the hospitals wherein the abuses were so terrible that men hardly liked to speak of them. . . . Some kind of a medical staff was improvised out of drunks, apothecaries, broken-down practitioners, and rogues of every description, who were provided under some cheap contract; the charges of respectable members of the profession being deemed exorbitant. . . . 'The dreadful mismanagement of the hospitals is beyond description,' wrote General Craig." (Fortescue.)

It will be noticed that this explanation of the rotten state of the medical service was the unwillingness to spend the money necessary for efficiency, and it requires but little study to realise that gross maladministration and peculation of public money were at the root of most of the troubles in all departments of the Army.

Hunter had been appointed in 1790 to be "Inspector-General of Hospitals and Surgeon-General in the Army," but he had died on Oct. 16th, 1793, before the breakdown I have mentioned above. As far as I can ascertain, however, his authority did not in any case extend overseas, and, even had it done so, it is quite certain that he would have been powerless to check abuses which originated in maladministration of Ministers in England, and which resulted ultimately in the armies being so starved of supplies of food and clothing that by November, 1794, there were 11,000 sick out of a total force of infantry of 21,000. It is not too much to say that the collapse and defeat of the British forces in Flanders at that time were brought about more by the want of ordinary care for our troops than by anything else. Even the best medical service is powerless when no provision is made for the ordinary necessities of life, especially if the combatant officers are as ignorant and inefficient as were very many of them at that time.

A Modern Contrast.

In the present war the splendid health of our armies has not been due solely to the work of the medical service during the war, good though that has been. It has also been due to the instruction of the combatant officers before the war in the value of good hygiene and of the proper care of the men in camps and billets. This, in its turn, has been supported by the abundance and excellence of the supplies of food and clothing which have everywhere followed our troops throughout the campaign in a never-failing stream; while the supervision and supply of drinking-water, the precautions taken to destroy flies and to burn refuse, to inspect and cleanse billets, &c., have all contributed to save life and to avoid sickness.

The result is that the invaliding rate from preventable disease in the fourth and fifth years of the present war has been no more than the same rate in times of peace, and while the war in Flanders at the end of Hunter's life failed largely because of the immense loss to the forces caused by the sickness of the whole Army, it is not too much to say that in the present war much of the efficiency and fighting power of the British troops has resulted from the good health and the consequent high spirits of all ranks. The records of many sieges have proved that sick and half-starved men may hold on to a defensive position and fight well to the last, but it is only robust, vigorous, and thoroughly healthy troops who are capable of enduring the immense strain of pressing home for many weeks in rapidly succeeding battles such a strenuous and victorious offensive as that initiated by the British Army on the ever-memorable day of August 8th, 1918, and consummated in the armistice of Nov. 11th.

HUNTER'S WRITINGS ON GUNSHOT WOUNDS.

It is very difficult properly to appreciate the value of Hunter's writings on gunshot wounds at the time of their publication, but their interest for surgeons can be better estimated if it is remembered that no one had previously written much about these injuries for many years, and that Hunter's great reputation and his position as Surgeon-General compelled the attention of everyone connected with the medical service.

Superstition and ignorance had united to create the belief that there was something about a gunshot wound which rendered it quite unlike any other, and, to use Hunter's own words, "they have been considered apart from other wounds and are now become almost a distinct branch of surgery." He then proceeds to point out that they are essentially "contused wounds," although they have certain peculiarities due to the passage of foreign bodies into the tissues, and that they should be treated on ordinary commonsense principles.

Hunter was the first to clearly appreciate and teach that in the gunshot wounds of his time "a part of the solids surrounding a wound is deadened and is afterwards thrown off as a slough, which prevents such wounds healing by the first intention." He pointed out how the separation of a slough might open a part of a large artery or a portion of intestine.

He realised that "the greater the velocity of the bullet the cleaner it wounds the (soft) parts."

He noticed that "when the velocity is small the direction of the wound produced by the ball will, in common, not be so straight, therefore its direction not so readily ascertained, arising from the easy turn of the ball."

He taught the much-needed lesson of not interfering with any wound unless a definite object was to be gained. He wrote: "We must see plainly something to be done for the relief of the patient by this opening (of the wound) which cannot be procured without it," and he was able by his influence and reputation to alter the practice of the routine opening up of every bullet wound, regardless of any indication for so doing, which was a universal custom before he challenged it.

His descriptions of peritonitis following intestinal injury and of infection of a hemothorax caused by a wound of the lung are masterpieces of observation and perception, and his opinion that a hemothorax might be advantageously treated by emptying the blood from the pleura coincides with the practice of the present day.

HUNTER'S VIEWS ON PRIMARY AND SECONDARY AMPUTATIONS.

It is evident that Hunter felt, as all surgeons have felt, the difficulty of deciding the best time for the removal of a hopelessly smashed limb, and it seems also clear that his experience of "primary" amputations, with the primitive methods of that day, had been bad.

The consequence was that he advocated delay, more especially when the lower extremity was concerned, but it is not clear what period of delay he had in his mind, for he does not indicate at all how many days he would wait. Here is his view:—

"In general, surgeons have not endeavoured to delay it (amputation) till the patient had been bruised and put in the way of cure; and therefore it has been a common practice to operate on the field of battle; nothing can be more improper than this practice, for the following reasons. In such a situation it is almost impossible for a surgeon in many instances to make himself sufficiently master of the case, so as to perform so capital an operation with propriety; and it admits of dispute whether, at any time and at any place, amputation should be performed before the first inflammation is over."

Again: "The only thing that can be said in favour of amputation on the field of battle is that the patient may be moved with more ease without a limb than with a shattered one, but it may be observed that there will be little occasion to amputate an upper extremity in the field, because there will be less danger in moving such a patient than if the injury had happened to the lower."

There is no doubt that modern surgeons would not agree that obviously necessary amputations should be delayed for several days, and would advocate their performance as soon as the condition of the patient permitted it. But we must remember that in the year 1760 methods of averting hemorrhage were very primitive, and that severe loss of blood from an operation which followed soon after the primary hemorrhage due to the injury might well prove fatal, when delay might have lessened the risk.

GUTHRIE'S ADVOCACY OF PRIMARY AMPUTATION.

In 1815 Guthrie published his book on "Gunshot Wounds of the Extremities Requiring the Different Operations of Amputation," and in it he strongly defended primary amputations and opposed with excellent reason the advice given by Hunter. In this he was certainly in the right, and largely because his opinions were founded on a very extensive experience.

Guthrie at the time I allude to was very young in years, for he was only aged sixteen when he joined the Army in 1801 as assistant surgeon. But the time he had spent in the Peninsular War had been a time of constant fighting, and his talents and skill had quickly earned for him a most responsible position in which he had opportunity for much operative surgery.

I therefore desire to direct your attention to the results which he quotes in support of his own views and in opposition to the advice of Hunter. These relate to (A) primary operations on the field of battle (Toulouse); (B) secondary operations in general hospitals (Toulouse).

| | (A) Primary amputations. | | | (B) Secondary amputations. | | |
|-----------------------|--------------------------|---------|--------|----------------------------|----------|--------|
| | Total. | Died. | Cured. | Total. | Died. | Cured. |
| Upper extremities ... | 7 | 1 | 6 | 15 | 3 | 12 |
| Lower extremities ... | 40 | 8 | 32 | 38 | 18 | 18 |
| Total ... | 47 | 9 (19%) | 38 | 51 | 21 (41%) | 30 |

To these figures Guthrie supplies the comment: "The medical duties both in the field on the day of action and in the Hospitals afterwards until the final evacuation of Toulouse were more immediately under my observation and control"; so that it is clear that the figures given represent the final results.

But I do not quote these figures merely for the purpose of showing that the practice of primary amputation was to be preferred to that of secondary, but also to draw attention to the fact that these results of primary amputation must be considered very good, and to ask the question how it was that these patients did so well.

No doubt one very important reason was that at the end of the Peninsular War surgeons had become very expert in the act of removing a limb, for the amputation rate was exceedingly high, and in the battle of Toulouse itself no less than 98 patients lost a limb out of a total of 1407 wounded, or about 1 in every 15.

It must also be remembered that in many patients the injury which justified amputation in those days was not necessarily so severe as to induce a serious condition of shock, for many amputations were done not so much because of the serious condition of the limb at the moment as on account of the complications which could by experience be foretold. Thus, it was well known that in few patients with fracture of the femur could life or a useful limb be saved, and all wounds of the knee-joint complicated by any fracture were also treated by amputation, conditions for which in the present war we should very rarely advise removal of the limb unless there were serious complications.

But although Hunter's advice to wait for amputation until "the first inflammation is over" was not accepted by his successors, it must be noted that we do not ourselves advocate operation "on the battlefield," nor should we in these days be satisfied as easily as Guthrie, who says:—

"The military surgeon should never be taught to expect any convenience; his field-pannier for a seat for the patient, and a dry piece of ground to spread his dressings and instruments upon are all that are required."

We should further note that Hunter himself advocates removal of a limb at once "if the parts are very much torn so that the limb only hangs by a small connexion," and also that "it may be necessary to perform the operation to get at blood-vessels which may be bleeding too freely."

PRIMARY AMPUTATIONS AT THE PRESENT DAY.

Let me ask you to consider the treatment of gunshot wounds by primary amputation at the present day.

In the first place, many surgeons besides myself have always advised that a completely shattered limb should be removed as soon as the patient can be brought into a field ambulance, unless his condition is such as to prohibit any operative treatment at all. There is no doubt in the minds of careful observers that the keeping of such a limb, even for a short time, is most prejudicial to the patient, probably to some extent because of the absorption of toxins from the smashed muscles, and that as soon as he is rid of it his condition improves.

In proportion as shock is severe and the limb is nearly severed, it is not, however, advisable to do at once a formal amputation above the

seat of injury—especially if the lower extremity be the one concerned—and it is enough at the moment to sever the remaining tissues with knife or scissors, to tie bleeding vessels, apply a dressing, and then to leave the patient to improve before more is done. This severance of the remaining tissues of the limb requires no anæsthetic save a small dose of morphia and the tight application of a tourniquet, for the latter causes so much numbness that no pain is felt from the procedure I have advocated.

It is especially inadvisable to give chloroform or ether if the conditions require the early evacuation of the patient or if a formal operation under an anæsthetic is shortly to be performed. A second administration of these anæsthetics after an interval of only a few hours has proved most harmful in such patients, and should certainly be avoided.

In other cases where the limb is not completely shattered but yet requires removal, it is generally best to splint it carefully and to send the patient to a casualty clearing station, where he can be put to rest in a warm place and be carefully tended till he has recovered from the effects of the journey and has taken plenty of fluid and has slept. After that there is generally no object in further delay, but in many cases it is necessary, in order to get the patient into an "operable" condition, to administer fluid of some kind either per rectum or by intravenous injection. For the latter purpose we have used with good results a 6 per cent. solution of gum arabic, or, if the loss of blood has been excessive, a pint or more of blood has been transfused, and by these means many lives have been saved.

I have already mentioned the inadvisability of two administrations of ether or chloroform, but where a patient is suffering from severe shock or hæmorrhage even a single anæsthetisation by either of these is very definitely dangerous, and may be quite enough to turn the scale in the wrong direction and prevent recovery.

I believe that in such cases as we are considering it is safer to give no anæsthetic than to give chloroform, and ether is not much better. Far the best method of anæsthesia is the administration of gas and oxygen, and amputations may often be performed when the patient is under the influence of this anæsthetic which could not be done at all without it.

I am indeed inclined to believe that the success in primary amputations of Guthrie and his contemporaries would have been diminished if chloroform could have been given, and I am quite convinced that it should never be employed in such cases.

During the present war we have gradually but steadily so improved our methods of treatment of men with severe shock caused by smashed limbs that we are now able to save patients by amputation of an extremity who would previously have died without operation being possible. On the other hand, we are also able to save very many limbs which would four years ago have been lost. Whereas in our longest established general hospitals about one patient in every 100 wounded men lost a limb in 1914-15, in the same hospitals during the past year amputations have been performed in only about one patient out of every 200.

GAS GANGRENE.

It is a curious fact that Hunter has practically nothing to say of the complications of gunshot wounds, and it is evident that those he saw left but little impression on him. In the present war the frequency of "gas gangrene" has greatly impressed all surgeons, for in civil practice it was practically unknown, and its frequency came as a rude shock to the aseptically trained operator. But if it be asked, "Did gas gangrene occur as a common complication in Hunter's time, and has it been of frequent occurrence in other wars?" I believe that the reply should be in the negative. My own belief is that in no previous wars has gas gangrene ever played so predominant a part as it has in France and Belgium in the early part of this war.

It must be admitted by all that acute gas gangrene is so striking and terrible a malady that it could not possibly have been overlooked if it were at all frequent. Yet I find no description of it in Hunter's work or in those of any of the early writers on war surgery, and although the latter wrote chapters on the subject of gangrene or "mortification," it is evident that they refer to that which is due to vascular lesions or else to an extensive smashing of a limb followed by sepsis.

It is certain that the so-called "hospital gangrene," so fully described by Larrey as "pourriture des hôpitaux," was not gas gangrene, but a spreading septic ulceration which characteristically did not occur soon after injury, but rather in suppurating wounds, and was of the same nature as the "sloughing-phagedæna," which not so many years ago was rife in wards for venereal diseases. And Larrey's contemporary in the French Army, Baron Percy, and Guthrie in the British Army, give no description of a disease occurring in the Peninsular War resembling the gas gangrene of the present day.

There is no mention of its occurrence, and still less of its prevalence, in the Crimean War; while Professor W. W. Keen, who himself served in the American War, writes to-day: "Personally I never saw a single case in the Civil War."

Various French writers described cases of gas gangrene in the Franco-German War of 1870, but, although there is no doubt of its occurrence at that time, there is no evidence that it was generally prevalent.

Coming to still more recent times, gas gangrene never occurred in the South African campaign, and was of quite rare occurrence in the Russo-Japanese War. Finally, I have personally inquired of many surgeons who took part in the Balkan War of 1913, and there is no doubt in their minds that it was very seldom seen.

In the present war gas gangrene has been practically unknown in Mesopotamia, Egypt, or Palestine, and I am informed that it did not

occur in the early days of fighting at Gallipoli, although it was occasionally seen later on. At the Salonika front it has been of comparatively rare occurrence, and it has not been nearly so prevalent on the Italian front as in Flanders.

Incidence of Gas Gangrene.

It is well known that at the beginning of the war in France and Belgium the medical services of all the combatants were quite inadequate to deal thoroughly with the immense number of wounded. Most of the latter at the time of the retreat from Mons and in the fighting on the Aisne had to be evacuated to base hospitals before any complete surgical treatment could be carried out. There were practically no "hospital trains" in those days, and the railway services were so crowded with supplies for the armies that traffic of all kinds was excessively slow. The result was that the wounded, placed when opportunity offered in the luggage-vans of empty returning supply-trains, were frequently several days in reaching their destination after being wounded, and great numbers of them were suffering from extensive gas gangrene on arrival, or else had succumbed to it en route.

During the ensuing "First Battle of Ypres" and the succeeding winter it was still an exceedingly frequent complication, but diminished very much during the next summer, when there was also much less fighting, until the battle of Loos in September, and during this battle it was much increased. In 1916 it was less evident until the heavy casualties of the battle of the Somme filled the hospitals with wounded, many of whom developed gangrene; and during the fighting at Arras and Vimy in the cold and stormy spring of 1917 there were still very many cases, in spite of good surgical work at the front. From that time, now nearly two years ago, gas gangrene has rapidly diminished, and during the year 1918 it has been comparatively little in evidence, at any rate in its worst forms, as will be gathered from the following samples of figures from the base hospitals during heavy fighting.

A. Of 5270 consecutive patients from the Messines battle (in June, 1917) there were only 22 cases of gas gangrene.

B. Of 3690 consecutive wounded at the beginning of the Passchendaele fight (in August, 1917) there were only 16 cases of gas gangrene.

C. Of 3200 at a later stage of the same fight 7 cases.

D. Of 2900 patients in July, 1918, there were 11 cases of gas gangrene.

E. Of 10,000 wounded in August, 1918, there were 27 cases.

It will therefore be seen that out of a total of about 25,000 patients at base hospitals, only 84 patients had serious, or "massive," gas gangrene; an incidence of about 1 case in 300 wounded men, and many of these had multiple wounds or badly smashed limbs.

Causes of Lessened Incidence of Gas Gangrene.

If the question is now asked as to what causes account for the great diminution of this grave affection in 1917-18, it must first of all be noted that:—

(a) The ascertained cause of gas gangrene is the presence of certain well-recognised anaerobic organisms which are present in highly dunged and cultivated soil, and are absent from that of the South African veld or the sun-dried sand of Egypt and Palestine, while they are present in small numbers and are apparently less virulent in Eastern Europe.

(b) The organisms concerned have little power over healthy tissues, but they are resistant to the strongest antiseptics and grow freely in damaged muscle, especially if into the latter be thrust some foreign body rich with the organisms, such as a piece of shell or muddy clothing. Some of the very worst cases are those where the "missile" is composed only of the mud itself which is driven with immense force by a shell or bomb exploding in muddy ground, and frequently causes a great number of small wounds, in some of which the mud may be driven right through the deep fascia or actually into the muscle sheath.

(c) Lowered vitality of the patient by exposure to wet and cold, and exhaustion from want of food, and over exertion, are predisposing causes, as is also to a very serious extent the deprivation of blood-supply, owing to injury of a large vessel. It is also clear that wet and cold weather and mud favour gas gangrene much more than heat and dust.

Such are the now well-recognised causes of gas gangrene and the conditions in which it may be expected to occur, and very much of the reduction now noticed is due to the abandonment of strong antiseptics, and to the timely excision and surgical cleansing of the wound and the removal of all foreign bodies. It may also be claimed that the thorough arrangements for the treatment of the chilled and exhausted man by warmth, rest, and intravenous injections have saved many lives through restoring the vitality and resisting powers of the patients.

Influence of Changed Condition of Soil.

But, when all this is allowed for, it is evident that there must have been other causes at work to account for so great a diminution of this danger to the wounded man, and these

must be sought in a lessened virulence of the infecting agent itself which has occurred during the past four years and has, in its turn, resulted from altered conditions of the soil in which the organisms are bred. That this is true is supported by the following facts:—

In the Somme battle of 1916, in spite of many thousand operations performed at the front, there were very numerous cases of bad gas gangrene both in the casualty clearing stations and at the base hospitals, although they were much less frequent than in 1914. In the Somme fighting over the very same ground, during the retreat in March, 1918, when the casualty clearing stations had to be abandoned, operations could not be done at the front. Patients had consequently to be sent to the base in trains of all kinds as well as in ambulance trains, and were often not thoroughly treated by surgical operation till after a delay of one or two days. Yet there were far fewer cases of gas gangrene in 1918 than in 1916, and in 20,000 patients at one base between March 23rd and 29th the incidence was only 1 per cent.

But, whereas in the earlier years of the war much of the land was covered with rich crops and had recently been very freely manured, at the present time in the battle areas the face of the earth is absolutely changed. A great stretch of country, comprising many hundreds of square miles, has been practically destroyed, as far as its development by mankind is concerned. What was once a prosperous country-side with highly cultivated arable land is now little more than a desert, pitted with shell holes, scarred by innumerable trenches and gunpits, the chalk subsoil scattered over the surface of the ground, the skeletons of smashed and shredded trees alone marking the sites of destroyed villages, and all appearance of cultivation wiped out. The whole land has gone back to "prairie conditions" and looks like an extensive and barren moor, although in summer time it is partly redeemed by the luxuriant growth of wild flowers.

In such a country which has been exposed to sun, wind, and rain, for three or four years, uncultivated, unmanured, uncropped, deserted by man and animals, it is probable that the anaerobic organisms have diminished both in numbers and virulence.

But, be the causes what they may, it was an immense relief to the surgeon in 1917-18 to find that this, the greatest surgical epidemic of wound infection which has ever been recorded, was neither so prevalent nor so dangerous as formerly, and that the wounded man was no longer so greatly exposed to grave risk of life or limb, even though his wound itself were slight and involved no vital part.

TRANSPORT AND HOSPITALS AT THE FRONT.

I now turn to the arrangements for transporting and treating wounded men.

Evolution of the Field Ambulance.

The history of the early hospitals in the British Army has been carefully investigated by the late Colonel William Johnston, and from his researches it appears that in Hunter's day the patients at the front were treated in "regimental hospitals" or else in "garrison hospitals." "Marching" hospitals or "flying" hospitals were established by William III., and first saw active service in his campaign in Ireland. In addition to medical personnel they had "nurses, cars for the transport of the sick, drivers, and men-servants." Unfortunately these precursors of our present field ambulances came to an end with the completion of Marlborough's campaigns in 1711, and were not revived until the nineteenth century, so that they did not exist in Hunter's time.

Ranby wrote in 1781 as follows: "I would wish to be indulged in a scheme which might, I think, be put into execution with all the facility imaginable. It is this, when the army is forming for an engagement let the surgeons with their respective mates of the three or four regiments that are posted next to each other collect themselves into a body and take their station in the rear according to the command of the general. Here let the wounded be put under their immediate care and management. By this means they will be enabled mutually to assist each other and to perform their duty both with care, exactness, and dispatch."

It is thus evident both that the need of some arrangement for mutual aid was felt and also that it did not exist in Hunter's time.

In those days the wounded soldiers were taken to the base in country wagons or in the regimental forage carts, and it was left to Larrey to create in 1792 the first "ambulance cars," which were reserved for the sole use of the sick and wounded and which were named by him "Ambulances Volantes." He figures and describes them as "a kind of carriage hung on springs, uniting great strength and solidity." They were of two kinds—the light with two wheels and the heavy with four wheels. Each ambulance "carre" or "division" was provided with 12 light and four heavy cars and comprised a personnel of 340 officers and men. Larrey states that after the battle of Eylau in 1807 the wounded were successfully transported by the *ambulances volantes* to *châteaux* "at a distance of not less than 55 leagues."

This "division" may fairly be claimed as the first efficient field ambulance in the history of war. Since this period horsed ambulances of various types have been employed as part of the transport of our own field ambulances, but it was not until the present war that "motor ambulances" were added to the transport of the field ambulances and that "motor ambulance convoys" were provided to supplement the latter. I think it is hardly

realised how much in present warfare the whole system of the treatment of the wounded is based upon and pivots on the "motor ambulances."

Influence of Increased Range of Projectiles.

In Hunter's time the range of the musket was two or three hundred yards and that of a cannon less than a mile; beyond this distance surgeons could work in safety. It was consequently not at all difficult to carry the wounded man to some place where a barn, or shed, or a stone wall offered sufficient protection, for there were no shells.

At the present day there is no such thing as absolute safety anywhere near a battle front.

Apart from bombs and guns of exceptional range, immense numbers of shells are fired to a distance of from 6 to 8 miles. The consequence is that, while surgeons supply skilled help, at much risk, at the regimental aid post or the advanced dressing station, within a very short distance from the line, the patients have to be removed quickly to considerable distances, and the casualty clearing stations have to be placed some eight miles or more in the rear. The consequence is that horsed vehicles could not possibly make a sufficient number of journeys to bring in the wounded from heavy fighting within a reasonable time, and in addition the numbers of the wounded are so great that there has been nothing in any previous war to compare with the task of the ambulances of the present day.

It must, therefore, be understood that all wounded men have now to be taken a considerable distance before reaching a place where they can be both immediately treated by the surgeons and also retained and cared for after operation. It is during this long motor-car journey from the battle-front that the patient runs risks of those further injuries which it is the object of the surgeon to minimise as much as possible.

Care of Wounded during Removal.

One of these risks is exposure to cold.

This is a most serious danger to men suffering from shock or hemorrhage. To avoid this hot-water bottles are freely used, stretchers are covered with one folded blanket, and the patient is warmly wrapped in others. The car is also usually provided with a pipe heated by a supply of hot air from the exhaust pipe of the engine.

The other most important risk is that of injury to the soft tissues by the fragments of broken bones which are jolted by the movements of the car.

The extent of this will largely depend on the roughness of the road and its pitting by shells, but to a still greater extent it will depend on the care with which suitable splints are applied. It is the custom in the British Army to splint all fractures as far forward as possible, and in any case at the field ambulance, with the result that, with the apparatus now provided, fractures are so immobilised that the minimum of risk is incurred and the minimum of pain is caused by the journey. It is not too much to say that very many patients who, without a good splint, would arrive in a state of collapse and die, or else would lose their limbs, now get down to the casualty clearing station with discomfort rather than with suffering.

It has been remarked that the modern offensive methods which characterise this war are largely dependent on the invention and development of the petrol engine, and that the tractors of great guns, the war in the air, and the war under the sea are all dependent on this device. It is at least some satisfaction to know that it is to the same device that tens of thousands of wounded men owe, not only a more comfortable transport than the soldiers of previous wars, but also the saving of lives and limbs in numbers beyond measure.

THE CASUALTY CLEARING STATION.

In Hunter's day the only hospitals near the front seem to have been those called "regimental," and they were apparently established in any buildings which seemed suitable for the purpose. I have not found any records of their equipment, the number of their personnel, or their accommodation. It is probable that they were very primitive.

In our own Army at the present day the demand for hospitals at the front has resulted in a new unit which has been created by the conditions peculiar to this war. I allude to the casualty clearing stations, and these have their counterparts in the armies of all the other European combatants.

Great Development in Work of Casualty Clearing Station.

This unit had not been in action before the present war. At the commencement of hostilities it consisted of a staff of six medical officers with a commanding officer and quartermaster and 80 orderlies; some of the latter were well-trained nurses. It provided accommodation for 200 patients on stretchers, but was not supplied with beds. Its surgical equipment consisted merely of sufficient instruments and appliances for the performance of a few urgent operations, and it was provided with one operating table and a few very primitive wooden splints. Its function, as the name implies, was "to clear" the field ambulances and to pass on by train the sick and wounded for further treatment at the base hospitals. Each unit was intended to be attached to a division and was supplied with horsed transport.

Since those days the long line of trenches and the comparative immobility of the armies until recently have provided the opportunity for very great developments, with the result that the casualty clearing stations of the present day are very efficient and well-equipped advanced hospitals, with theatres for six or more tables, and suitable in every way for the performance of any operation. They have been expanded to provide, according to circumstances, for from 600 to 1200 patients, of whom 200 have beds and the remainder stretchers.

A great deal might be said of the work of the casualty clearing stations which would be out of place here, but it may be pointed out that an advanced hospital of this type is an absolute necessity in the warfare of the present day. Very little experience was required to show that it was quite impossible to carry out the pre-war idea of doing all the surgery (with few exceptions) at the general hospital at the base. Men with such injuries as wounds of the chest and abdomen, severe fractures, and wounds of large vessels, could not be safely conveyed long distances by trains, while patients suffering from dangerous shock or the effects of profuse hæmorrhage demanded immediate treatment as near the front as possible. But, over and above all these, the necessity which arose for early operation in order to prevent the development and spread of gas gangrene or dangerous sepsis in even slight wounds alone justified the expansion of the casualty clearing stations.

The Surgery Carried out at Casualty Clearing Stations.

It will thus be seen that the object in view in their development was to secure efficient treatment as early as possible. The ideal of surgical treatment would be the supply of enough surgeons and enough hospitals close to the front to allow of all operations being always performed there with the least possible delay. This ideal has, indeed, been often realised in the present war, when, during quiet periods, the wounded were comparatively few, but it has proved impossible to supply enough surgeons and enough accommodation to realise the ideal when the casualties of a great battle number many thousands a day, and when the duration of the battle is measured not by days but by weeks or months. But, although it has not been always possible to do that which is ideal, the custom of reinforcing busy hospitals with "teams" of extra surgeons, anaesthetists, and assistants has enabled an immense amount of work to be done.

Apart from operations on the abdomen, the chest, and the head, the vast bulk of this work is of a nature which appeals to surgeons and to patients alike, for it is "conservative surgery" in the best sense of the term. In the first place it consists largely in the thorough surgical cleansing of wounds so as to save limbs and lives, and in the second place it supplies the necessary foundation for the early closure of the wounds by suture. In this way large flesh wounds are prevented from suppurating, "compound" fractures are made "simple" fractures, and the patient is saved from a long illness and its debilitating effects. Such treatment diminishes stay in hospital, frees hospital beds, lessens the labour of nurses and surgeons, and, best of all from the point of view of the Army, it enables many patients to recover quickly and to return to their regiments.

I would claim that, apart altogether from considerations of humanity, good front-line surgery very fully compensates an army for the demands it necessarily makes on supply and transport. It more than pays its way both by returning sound combatants to the ranks, and also by saving the country the expense of innumerable pensions on behalf of men whose lives or limbs have been saved.

Value of Front-line Surgery to the Army.

Long before this war the combatant branches of the Army fully realised the importance of the prevention and cure of illness and their effects on the maintenance of armies in the field, but it is only during the present war that the value of good and prompt surgery has been fully appreciated and that the necessary facilities have been supplied whenever the military situation has permitted. Similar facilities will henceforth be expected in all future wars.

It is well known to the medical profession that an immense amount of this front-line surgery has been successfully undertaken, and it is also well known to, and deeply appreciated by, the combatants of all ranks, whose confidence and faith in the Army Medical Service is by far the best possible tribute that could be paid to it. I will not attempt to supply any statistics, but some idea of the magnitude of the surgical work at the front will be gathered if I state that during the three and a half months of the Third Battle of Ypres in 1917 61,500 operations were performed under anaesthetics in the casualty clearing stations of two armies.

Organisation: Adaptation to War of Movement.

It will easily be realised that much forethought and preparation are required to produce these results, for they require not only arduous work by day and night for, perhaps, 12 hours out of 24—a tax on the strongest when continued for weeks on end—but also the harmonious working from the front to the rear of stretcher-bearers, regimental medical officers, field ambulances, ambulance convoys, and ambulance

trains, any one of which is liable to interruption by accident or by the acts of the enemy.

The staffing of the casualty clearing stations for the Third Battle of Ypres especially deserves to be recorded, for on this occasion many of the most representative surgeons from the United States, from Canada, Australia, New Zealand, and South Africa were included in the reinforcing surgical "teams," or else were on the staffs of the casualty clearing stations of the armies concerned. Thus, for the first time in history, the surgical skill and talent of all the various sections of the Anglo-Saxon race were brought together on a battlefield, and with the happiest possible results to the wounded men. On this occasion, because of the absence of heavy fighting in other armies, more surgeons were available than at any other period, and no clearing station had less than 24 surgeons and 24 nurses. It was therefore possible to keep eight operating tables in action in every unit, and there is no doubt that almost every wounded man whose condition made it advisable was passed through the operating theatre before being sent by ambulance train to the base.

The war of movement which characterised the closing stages of the campaign called for the development of new methods for meeting the situation thus created. Of the details of these a great deal might be written which would be too lengthy for the present occasion, but this much may be said. The clearing stations were sufficiently reduced in the bulk of their equipment to enable them to be rapidly moved forward, and they were frequently able to take in and treat many hundreds of men within 24 hours of their arrival on a new site, while at no time during the whole campaign was there more work done in resuscitating the badly wounded and in the intravenous administration of blood or of alternative fluids to men who had suffered from severe hæmorrhage.

CONCLUSION.

And now let me recall to your attention a phrase of Hunter's which I read to you at the beginning of this address.

"It (the appointment to the Bellefleur Expedition) drew my attention to inflammation in general, and enabled me to make observations which have formed the basis of the present treatise."

The war was to him not merely a sphere for the exercise of his surgical skill, but also an opportunity for observing and studying conditions of which he had hitherto had no experience. What has this war been to the surgeons of the present day? It may truly be said that very many of them, and in all parts of the world, have entered into this work imbued with the spirit of our great master. To them it has not only afforded immense opportunities of helping their fellow countrymen, but has also provided problems for study and for solution.

The spirit has been one of progress and of development and of unwillingness to rest content with conditions that might be bettered or with methods which proved unsuitable. It is not too much to claim that each year of war has seen better surgical measures devised and consequently better results obtained. The sufferings of the wounded have been lessened, the dangers they run have been diminished, and lives and useful limbs have been saved in constantly increasing numbers. Surgeons have not been content merely to guess at possible answers to the never-ending questions suggested by the complications of war. They have devised new methods to meet new conditions and have put them to the test of experience; and when they have failed they have tried and tried again until they have compelled success.

In this great tragedy of war the Royal College of Surgeons of England has played no unimportant part. Hundreds of its Fellows and thousands of its Members have willingly pressed forward for service. Some of them, like our President, have occupied with credit and honour the most prominent and important positions, and others of them, often less prominent no doubt, have not only given their services, but have also given their lives. The position I have had the honour to hold in the Army Medical Service has afforded me very abundant opportunities of appraising the performances of others, and I am full of admiration both for the skill and ability of our surgeons and for the splendid work done by the Royal Army Medical Corps in rescuing the wounded in conditions of unprecedented difficulty and danger, and in organising the hospitals for the subsequent treatment and restoration to health of the British soldier.

THE BURIED SEQUESTRUM: A POST-WAR PROBLEM.

By JAMES PHILLIPS, F.R.C.S. EDIN.,
MAJOR, R.A.M.C.; OFFICER I/C SURGICAL SECTION, BRADFORD
WAR HOSPITAL.

FOR long surgical skill will be required to remedy conditions resulting from gunshot wounds. The class of case dealt with in this paper is certain to call for treatment in hundreds of instances. I have followed the method of treatment described below at the Bradford War Hospital since the spring of 1917.

Causation and Treatment.

1. The condition is associated with the extraordinary multiplicity of comminution which characterises war-wound fractures. The bone is commonly splintered into many fragments; the periosteum is torn and separated from the bone; the spaces between the various fragments and between them and the periosteum become filled with new bone, in the midst of which lie one or more sequestra. It is these buried sequestra which are responsible for the persistent suppuration.

2. In a majority of cases little aid is to be obtained from X ray examination or from the condition or direction of the sinuses, &c., towards diagnosing the character, size, and position of these sequestra.

3. The only treatment likely to be successful consists in baring the bone from overlying soft tissues and freely chiselling through bone until the sequesterum is exposed. This is a severe operation, and, as multiple sequestra are not uncommon, more than one operation may be required.

4. The removal of the necrotic tissue makes it possible to treat bone cases by the Carrel method; the wound can be made surgically clean, and secondary suture successfully practised.

The rôle of the periosteum.—Fig. 1 shows a piece of femur removed in re-amputation after a guillotine amputation in France nine weeks previously. Evidently the periosteum had been separated from the femur in the course of the primary amputation and osteogenesis had resulted in the formation of a large mushroom boss of new bone. Had the

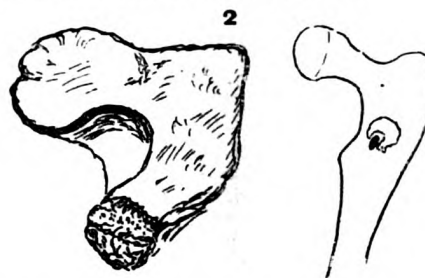


Drawing of piece of femur removed in re-amputation of thigh.
a, Bone protruding, bare of periosteum. b, Epiosteal new bone, surrounded by scar tissue and muscle. c, Normal bone.

case been left I have no doubt that the piece of bone (a) would have become separated as a ring sequesterum. I am inclined to think that in some similar pathology may be found the explanation of myositis ossificans. This condition comes on after an injury, generally one affecting a muscle attachment to bone. If we imagine that the injury has produced some separation of periosteum from bone, it is not difficult to picture the osteoblasts becoming free to invade the damaged muscle fibres and their subsequent conversion into bone cells.

Fig. 2 shows a mass of new bone removed from a femur of which there was a partial fracture. The missile has penetrated the periosteum just externally to the small trochanter. The man had been treated at another hospital from May, 1917, to February, 1918, and was then sent to his home in Bradford on furlough. The wound broke down, and he was admitted to the Bradford War Hospital. A

lump was felt in the left femoral region which the X rays showed to be a bony growth. An inch-long sequesterum was removed from a granulation-lined cavity in the bone; the cowl of new bone figured had been thrown out over the sequesterum. The wound was treated by Carrel's method and secondary suture successfully performed.



Piece of bone chiselled from femur; it formed a cowl over a sequesterum.

The same sort of rampant overgrowth of new bone takes place around a badly comminuted (gunshot) fracture. A femur may become two or three times its normal thickness; nor does a radiogram usually show the full extent of the enlargement, since many months are required before the new bone is sufficiently calcified to be opaque to the X rays. It may be that sequestra keeping up a constant discharge are buried an inch or more deep in this mass of new bone. The difficulties in the way of localisation are very considerable.

The diagnosis of buried sequesterum.—The persistence of one or more sinuses is, of course, a constant feature where there is chronic osteomyelitis. I have had all my cases X rayed, but the number and size and site of sequestra more often than not cannot thus be diagnosed with any certainty. In one plate (Fig. 3) the sharp end of what is obviously a sequesterum is sticking out; in another (Fig. 4) a less dense area in the shadow indicates a cavity which probably contains a sequesterum. But in a large proportion of cases the findings are negative. (Fig. 5).

Method of Operation.

Whenever a case comes under my care in which either rough bare bone is felt by the probe or a persistent sinus leads to the seat of an old bone injury of the femur, and especially if X-ray examination points to sequesterum formation, I operate in the following way.

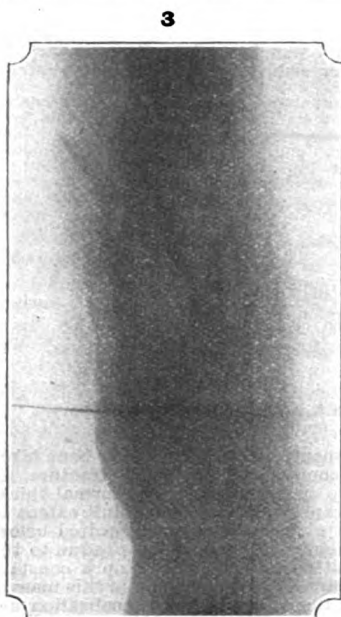
An incision long enough to permit of the exposure of the whole of the damaged area of bone is made and carried down to and through the periosteum. All the soft parts, including periosteum, are cleared from the bone with an elevator, bony irregularities are chiselled away, sinuses in the bone are followed up, and an attempt made to find and remove all sequestra. How difficult this may be is illustrated by the following case (the first treated in this manner).

Pte. S. admitted to Bradford War Hospital Sept. 8th, 1916. A month earlier right femur badly smashed by rifle bullet. He was treated on a Thomas's knee splint and firm union with good alignment obtained, but pus kept collecting and bursting through sinuses in both front and back of thigh. I opened up sinuses and used a sharp spoon on several occasions, but suppuration persisted. I showed the case to Sir B. G. A. Moynihan, and on his advice I undertook the method of treatment now described.

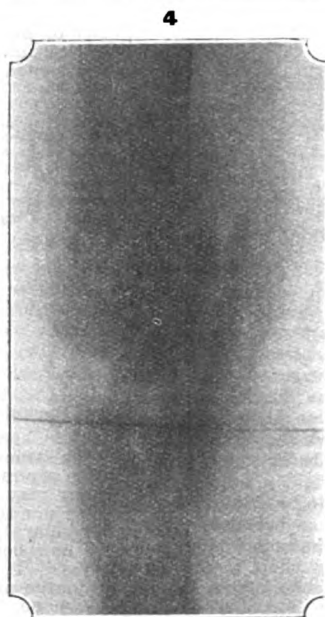
On May 7th, 1917, a 10-inch incision was made in front of the thigh, the femur cleared in the whole length of the incision, and irregular new bone freely chiselled away, two sequestra removed, and a fairly smooth-walled shallow cavity left in the femur. The wound was treated by Carrel's method; on May 29th reported sterile. On June 1st it was closed in the method described below; stitches removed on June 25th. On July 3rd "wound dry and firm." A day or two later the apparently soundly healed posterior wound began to discharge. On July 20th it was opened up and further extensive chiselling done; three large sequestra (the smallest nearly 2 inches long) were found, which had been quite unsuspected.

The necessary chiselling of such a femur is an operation which, if undertaken in a man who has been absorbing toxins from a suppurating wound possibly for months, is likely to be associated with a good deal of shock. More than once I have thought it wise to complete this stage of the operation at a later sitting. When every obvious crevice and cranny in the bone has been smoothed away with the chisel the soft parts are stitched open by passing one or more mattress sutures of thick iodined silk through the muscles and then through the skin at some distance from the edge of the wound.

The sterilising of the wound is done by Carrel's method. Dakin's solution is instilled every two hours, and at least once in 24 hours a thorough cleansing of the wound is undertaken. The cavity is opened out to the bottom with



Sequestrum poking out of hole in a femur (from Case 5).



Femur with cavity containing sequestrum. Four long sequestra were removed from this femur.



Femur radiographed post mortem. A sequestrum 3 inches long could be seen through a fenestrum in the bone, but the radiogram gives no idea of its presence.

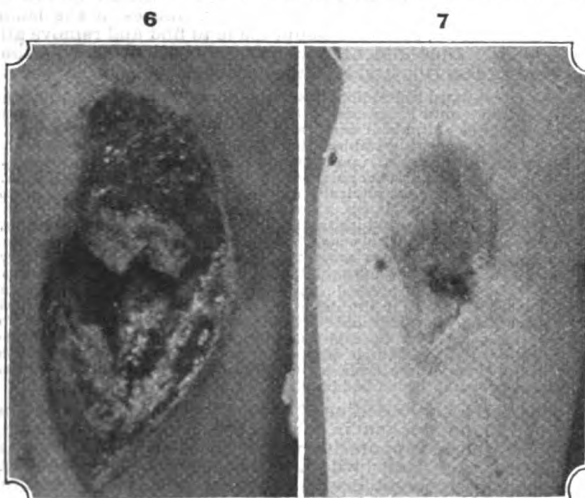
dressing forceps and is tightly packed with gauze and wool swabs wrung out of Dakin's solution, and these remain in it while the cleansing of the skin is proceeded with (where the cavity is deep it is most important that the swabs be counted). Only by thus packing the wound have I found it possible to prevent the sides of the cavity from growing together. At first the packing is likely to cause pain and the dressing may have to be done under an anaesthetic, but the chief cause of the pain is sepsis and as the wound becomes sterile pain and tenderness disappear. The discharge is examined bacteriologically twice a week and when the "film chart" shows 3 or less organisms per field for two successive examinations the closure of the wound is proceeded with.

The closure of the wound.—The skin is prepared for operation by the nurses as in any ordinary planned operation. On the table a further cleaning up is done. The granulations are thoroughly curetted, the soft parts are raised from the

absorbent dressing is applied and left in position for 14 days; it is then renewed, but the sutures are left *in situ* for another week. The result is generally a linear scar; usually a little discharge takes place from one or two stitch holes, but at the end of a month there is, as a rule, a firmly healed cicatrix.

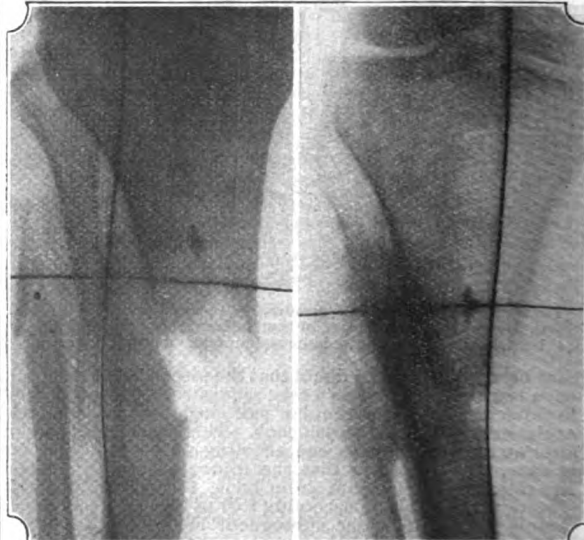
Illustrative Cases.

CASE 1.—Gunner S., wounded by shrapnel March 21st, 1918. Admitted Bradford War Hospital April 17th. Three vertical wounds, one behind the other, about upper part of right thigh. X ray report: "The great trochanter has been comminuted and some fragments of bone driven backwards into the gluteal muscles." On May 6th the middle wound was opened up and comminuted bone and surrounding granulations chiselled away. Wound stitched open. By June 7th the "film report" was satisfactory and the wound was sutured and practically primary union took place.



Case 8 three weeks after admission.

After skin grafting.



Radiograms of Case 8 at periods corresponding to Figs. 6 and 7.

bone until they can be brought together without much, if any, tension. The skin is freely undercut and its edges trimmed. The undercutting is essential if a non-adherent linear scar is to result. The raw surface is swabbed first with methylated spirit and then with bipp. A running catgut stitch brings the deep fascia edges together over the muscles. Thick silk stitches are passed through all the soft tissues from skin to periosteum so as to close the wound, leaving no dead cavity. A continuous catgut stitch is used to secure accurate apposition of the skin edges. An

CASE 5.—Pte. P., wounded July 9th, 1916. Lay in shell hole four days. Sent straight to England, arriving at Bradford War Hospital on July 15th. Badly comminuted fracture of lower third of right femur, much sepsis, effusion into knee-joint. This was before the days of bipp and Carrel-Dakin treatment. Patient was extremely ill, abscesses formed in various parts of the limb, and when union had taken place and only one or two sinuses remained he was sent to country to convalesce. Readmitted on June 30th, 1917. A week later the wound was opened up and several central sequestra, of which the largest

measured $2\frac{1}{2}$ by $\frac{3}{4}$ inches, were removed. He was averse from further operation. Wound, treated by Carrel's method, appeared to close from the bottom slowly but satisfactorily. On Dec. 19th it was dry and he was marked for invaliding board. But on Dec. 27th pain, swelling, and fever appeared and two days later an abscess burst. On Jan. 14th, 1918, the wound was laid open by a 10-inch incision and some newly formed bone chiselled away. On Feb. 18th the wound was clean and it was sutured. On March 14th the wound was dry; he was allowed up; on March 23rd he proceeded home.

This case shows that secondary suture is required in addition to removal of necrosis and cleansing of the wound. The wound was kept clean and appeared to heal over, but a dead space remained, and in this materials collected which became infected. When once more the wound was clean and had been surgically closed healing took place at once, and less than five weeks after the closing operation the patient was discharged with his wound soundly healed.

A fracture of the shaft of the humerus can often be most successfully treated in the manner described, but of course free incisions require to be carefully planned so as to avoid the nerves.

Different treatment is required where the fractured bone is subcutaneous or poorly covered with soft tissues—as, for example, the condyles of the femur, the shin, the lower half of the radius or ulna.

CASE 3.—Driver B. H.E. shell wound of right leg on Oct. 4th, 1917. F.B. smashed through upper end of right tibia and was removed from

calf. At C.C.S. infected muscle and bits of comminuted bone removed. Admitted to Bradford War Hospital on Oct. 15th with large wounds back and front of upper half of right leg, the latter showing badly smashed tibia and fibula. Carrel's tubes inserted and leg placed on Thomas's splint. The posterior wound healed up fairly quickly; on Dec. 3rd firm union of the fibula and partial union of the tibia were noted; the extension apparatus was removed. On Jan. 4th, 1918, a clean granulating surface $3\frac{1}{2}$ by 1 in. over the front of the head of the tibia was skin-grafted. No dressing of any kind was applied; the leg was simply covered over by a cage. By Jan. 18th the graft wound had healed and the man was getting about on crutches. What one has noticed in other cases was observed here—viz., that new bone apparently continued to be formed beneath the healed grafts. At first the scar was markedly concave, but after some weeks the cavity was very definitely less deep.

There is a steady stream of men being sent to their homes near Bradford, either as transfers or as pensioners, in whom sinuses leading down to bare bone are present many months, sometimes years, after the wound was inflicted. For such cases radical methods such as the one I have described are the only ones likely to lead to healing of what must otherwise remain in many instances permanently discharging wounds. My sincere thanks are due to Miss Mitchell, the radiographer, and to Mr. Bernal Riley, the honorary photographer to the Bradford War Hospital, for the great trouble they have taken with the illustrations.

"PROPELLER" FRACTURE.

BY LIEUTENANT-COLONEL A. L. JOHNSON, C.A.M.C.,
SURGEON SPECIALIST, MILITARY HOSPITAL, SHORNCIFFE.

FRACTURE of both bones of the forearm by direct violence, commonly caused by "back fire" when cranking a motor, was widely observed during the earlier years of the automobile. It has become less common since the introduction of self-starting appliances. That an analogous type of fracture is common in aeroplane operation is suggested by four cases of supracondylar fracture of the right humerus, all caused by aeroplane propellers, which have been treated

At the word "contact" from the mechanic the pilot throws the switch into contact with the magneto, causing a spark, which ignites the gas and starts the engine. If the "team



FIG. 1.—Posterior angulation on straight Thomas's splint.



FIG. 2.—Anterior angulation on right-angled Thomas's splint.

recently in the Surgical Division of the Military Hospital, Shorncliffe. As this type of injury is likely to be common both during and after the war, it is thought worth while to bring this limited but instructive series of cases to the attention of the profession.

Nature of Injury and Treatment.

The history of the injury, the clinical condition, the conduct of the cases, and the variation from the classical treatment of this type of fracture are all significant.

The history of the injury is as follows: To start a non-self-starting aeroplane an air mechanic grasps a blade of the propeller and then turns it. At the same time the pilot opens the throttle in order to flood the cylinders with gas.

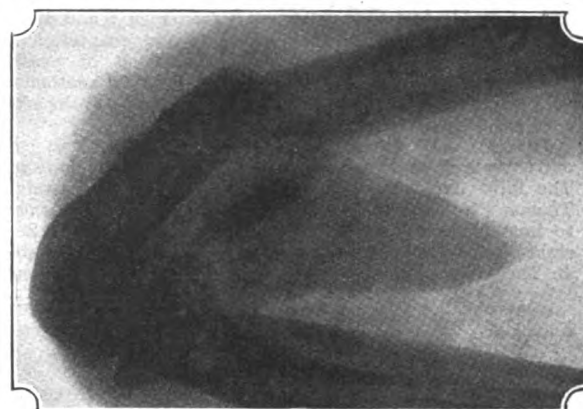


FIG. 3.—Lack of good alignment with arm in acute flexion.



FIG. 4.—Good anatomical result with Middle-dorf splint two months after injury.

work" is faulty the mechanic is liable to be struck down by the propeller before he can escape. This was the history in the four cases forming the basis of this note.

Clinical history.—In all cases there was compound fracture of the right humerus from one to three inches above the epicondyles. There was a transverse lesion of the soft tissues at the plane of fracture, on the antero-external aspect of the arm. Considerable hæmorrhage was present and great œdema and ecchymosis.

1. During the subsidence of these conditions the arm was immobilised in a straight

Thomas's splint, and the local condition was treated with dressings of liquor plumbi evaporans t.i.d. applied on lint. In this splint the radiogram

showed a posterior angulation, and particularly a posterior displacement of the lower end of the upper fragment. (See Fig. 1.)

2. A right-angled Thomas's splint was next applied, with the forearm in supination and with extension to the lower end of the humerus. The fracture was reduced by manipulation, but the appliance did not serve to retain

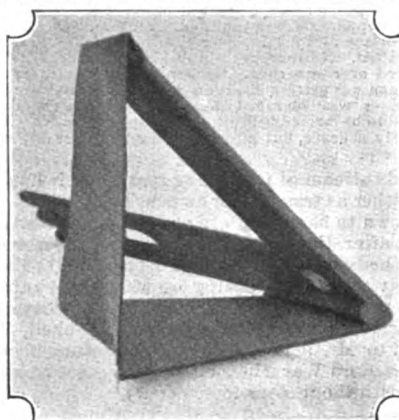


FIG. 5.—The Middledorf triangular splint.

the fragments in alignment and apposition, there being anterior angulation. (See Fig. 2.)

3. The classical text-book treatment of a acute flexion was next tried. It had not been possible previously because of the dressing of the wound, which would have necessitated extension of the forearm at

each dressing and consequent disturbance of the fracture. In any case, good alignment was not obtained with the elbow in acute flexion. (See Fig. 3.)

4. A Middledorf triangular splint (see Figs. 5 and 6) was next applied, with anterior and posterior coaptation of Gooch's splinting. This appliance admitted of passive movement daily of the forearm and gave a good anatomical and functional result. (See Fig. 4, taken two months after receipt of injury.)

Remarks.—The treatment of these four cases ran concurrently and the experience in all of them was uniform. The following conclusions may be stated: 1. A straight Thomas's splint is useful during the first 10 days of treatment to immobilise the arm and to facilitate treatment. 2. A right-angled Thomas's splint with extension is not suitable. 3. The classical treatment of putting the arm up in acute

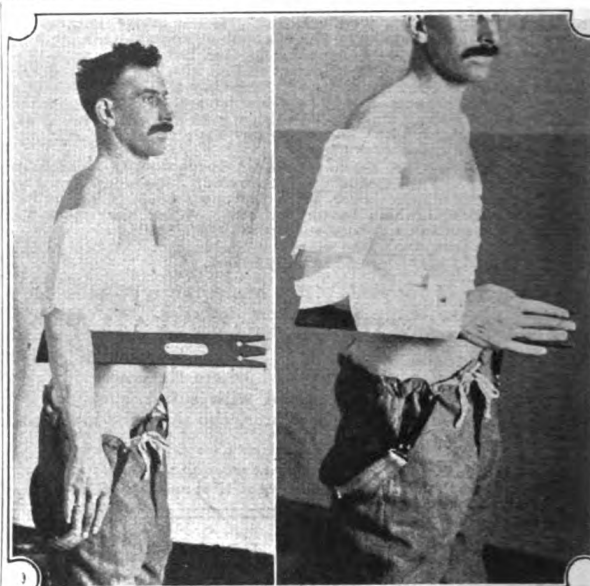


FIG. 6.—Middledorf splint in position.

flexion is not suitable. 4. A Middledorf triangular splint admits of correct alignment of the fractured humerus, a satisfactory anatomical and functional result. It allows passive movement of the elbow-joint during the period of treatment without disturbance at the seat of fracture.

I am indebted for the accompanying photographs to Colonel E. J. Williams, D.S.O., C.A.M.C., and for the radiograms to Lt.-Col. George Musson, C.A.M.C. The clinical notes were taken by Captain W. H. Secord, M.C., C.A.M.C., and Captain C. S. Strong, C.A.M.C. The Middledorf triangular splint may be had from the Kensington War Supply Depot, 13, Kensington-square, London, S.W.

AN INVESTIGATION INTO THE BLOOD-SUPPLY OF MUSCLES, WITH SPECIAL REFERENCE TO WAR SURGERY.

BY J. CAMPBELL, M.D. LIVERP.,
CAPTAIN, R.A.M.C. (S.R.);

AND

C. M. PENNEFATHER, M.B., B.S., M.R.C.S.,
L.R.C.P.,
CAPTAIN, R.A.M.C. (T.C.).

It appeared to one of us (J. C.) that a knowledge of the distribution and arrangement of the arterial supply in individual muscles would be of use in the treatment of war wounds: (1) with regard to the amount of tissue that should be removed in primary excision of wounds; and (2) with a view to elucidating the cause, prevention, treatment, and method of spread of gas gangrene. The information thus gained is useful and important. Indeed, one of us has found that it has been the means of saving quite a number of lives, of avoiding a still larger number of amputations, and of preventing recurrence of gas gangrene after operation.

Arterial Distribution in Muscle.

The scope of the present paper is limited chiefly to a consideration of arterial distribution in muscle. Later communications will deal with the clinical aspect, &c., of gas gangrene. For purposes of comparison the arterial distribution in other organs was also investigated. Photographs illustrating the vascular arrangement in muscle are seen in the figures.* The radiological side of the investigation was carried out entirely by Captain Pennefather.

If we compare the skiagrams of the muscles with specimens and radiograms illustrating arterial distribution in brain, heart, and small gut we see at once that the arrangement of the arterial tree is identical in all cases. We also see that in none of them are the vessels strictly

* These photographs were made by first of all injecting the main vessel of the region with a light bismuth salt and then radiographing the excised muscles.

terminal—i.e., without any anastomotic communications. In all cases anastomoses are present, but only as *very fine ones*. (Fig. 3.) Large loops resembling those in the mesentery or subcutaneous tissues are rare. Hence if we are justified in calling the arteries in brain, heart, and small gut "end-arteries," we are equally justified in applying the term to those inside muscle.

If now we examine collectively the skiagrams of the muscles, we readily see that we can divide the muscles into three main classes:—

I. Those with a blood-supply derived from many different sources and in which potential anastomoses between the different sources are quite numerous. (Figs. 1 and 5.)

2. Those with a blood-supply derived from only two or three different sources, but in which the potential anastomoses between these sources are, relatively speaking, few in number. (Figs. 2 and 3.)

3. Those with a blood-supply derived, for all practical purposes, from only one source, and in which, granted that this main source of supply is cut off, almost the entire muscle becomes ischaemic, and therefore liable to almost complete destruction, owing to the practically complete absence of potential collateral channels. (Figs. 4 and 5.)

These classes are respectively illustrated by:—

I. The deltoid and pectoralis major. (Fig. 1.) To this class also belong pectoralis minor, the scapular muscles, biceps brachialis, brachialis anticus, triceps adductor magnus, gluteus medius, gluteus minimus.†

II. Gluteus maximus (Fig. 2), rectus femoris, hamstring muscles (semi-membranosus, semi-tendinosus (Fig. 3), biceps cruris), sartorius.

III. Crureus (Fig. 5), gracilis (Fig. 4), inner head of the gastrocnemius, outer head of the gastrocnemius.

Relative Liability to Gas Gangrene.

If now we look at these three groups of muscles we see that they have a varying liability to gas gangrene (with the exception of those mentioned in the foot-note as belonging to Class 1). Thus Group I. is formed of muscles that are but

† In this class we must also place soleus, vastus intermedius, vastus externus (Fig. 5), the deep muscles of the calf, the anterior leg muscles. These muscles are not included above for certain special reasons that will be referred to later on in another communication.

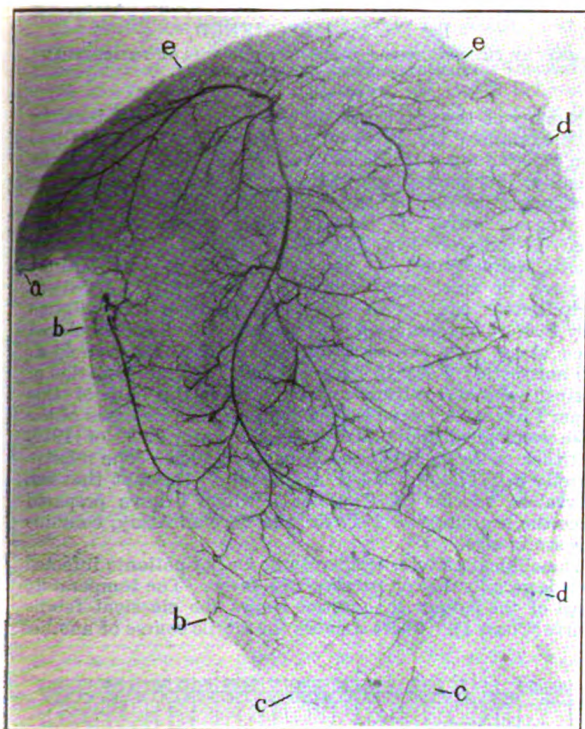


FIG. 1.—Arterial supply of pectoralis major (Group I.). *a*, Twigs from humeral branch of thoracic axis artery; *b*, From long thoracic artery; *c*, From intercostal arteries; *d*, Branches from internal mammary; *e*, A number of branches from thoracic axis artery.

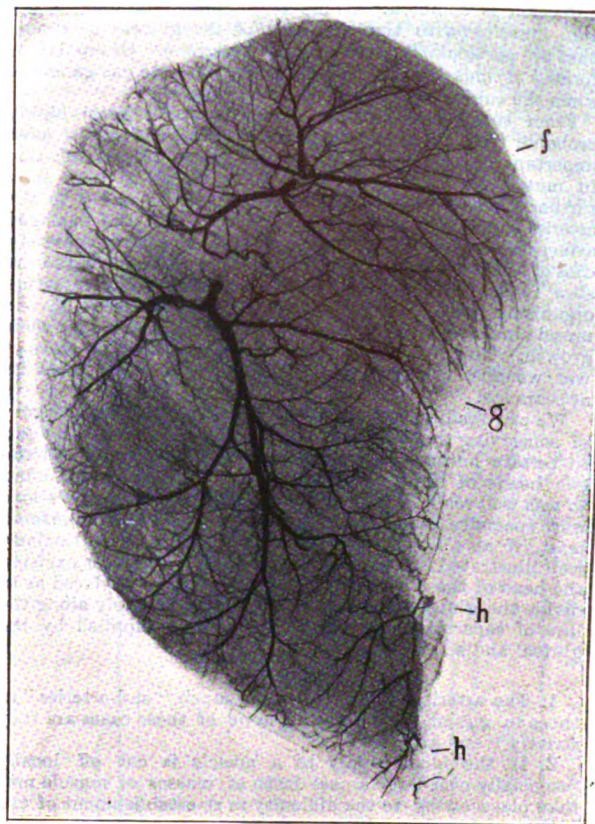


FIG. 2.—Arterial supply of gluteus maximus (Group II.). *f*, Superficial division of gluteal artery; *g*, Sciatic artery; *h*, Twigs from external circumflex artery.

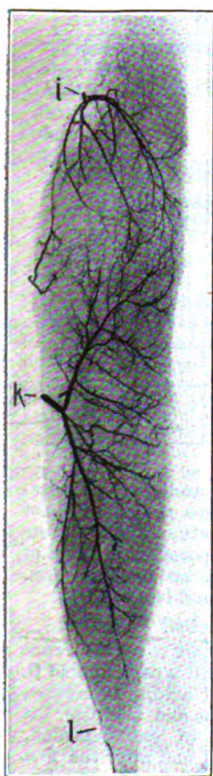


FIG. 3.—Arterial supply of semi-tendinosus (Group II.). *j*, Twigs from sciatic artery; *k*, Branch from perforating artery; *l*, Twig from anastomotica magna artery.

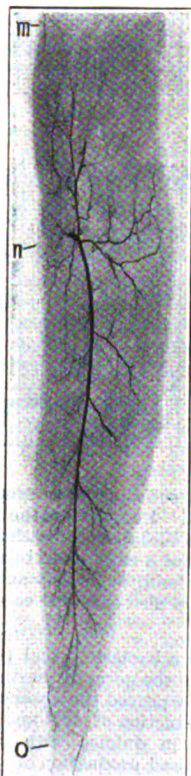


FIG. 4.—Arterial supply of gracilis (Group III.). *m*, Twigs from obturator; *n*, Branch from internal circumflex artery; *o*, Twig from anastomotica magna artery.

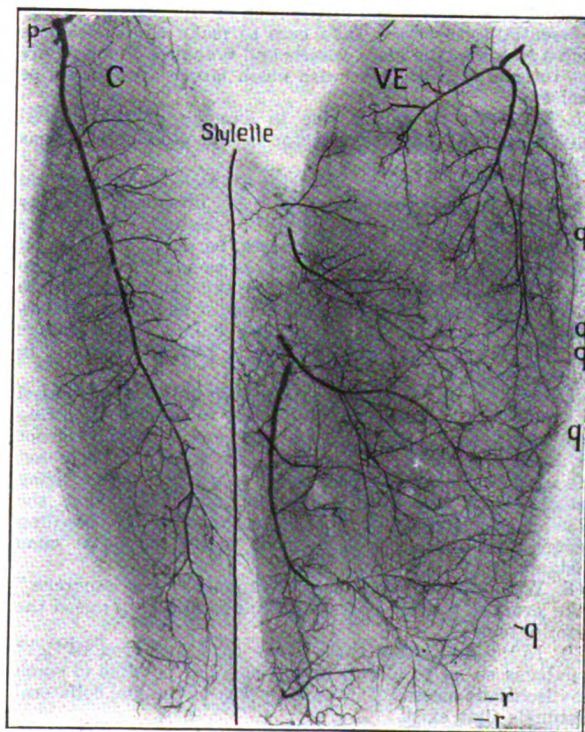


FIG. 5.—Arterial supply to crureus (C) and vastus externus (VE). The vastus externus has been turned outwards, as on a hinge, on its origin from the linea aspera. The two muscles are approximately separated by the stylette. Crureus, Group III.; Vastus Externus, Group I. *p*, Branch from external circumflex artery; *q*, Twigs from the four perforating arteries; *r*, Twigs from popliteal after piercing biceps m.

rarely the subject of gas gangrene, though localised gas infection is common. Group II. is formed of long, strap-like muscles (with the exception of the gluteus maximus) that are particularly prone to gas gangrene. Group III. is formed of muscles that are still more prone to gas gangrene when the subject of any severe laceration.

From these observations, then, it would seem highly probable that vascular distribution in muscle has a most important bearing on the origin and spread of gas infection in muscle. This subject is to be referred to fully in a further communication. In consequence of injury to the arterial supply the mass of muscle to which the damaged artery is distributed in Classes 2 and 3 either completely dies or becomes devitalised to a marked extent owing to the slow re-establishment of the circulation. When infecting organisms, particularly the bacilli of gas gangrene, invade muscle in this condition they find a nidus suitable for their growth. This, we think, is what happens in many cases of war wounds, with the result that gas gangrene makes its appearance.

We can readily see, then, the importance in war surgery of conserving the blood-supply to all muscles generally and to certain muscles in particular (gracilis, crureus, and the two heads of the gastrocnemius). The necessity for doing so was well realised in pre-antiseptic days when operations were specially planned along those routes which interfered least, if at all, with arterial supply. This is particularly well illustrated by the classical posterior route for excising the head of the femur. Here the incision is so placed as to divide the gluteus maximus muscle approximately along the line of separation between the portions supplied by the gluteal and sciatic arteries.

Conclusions.

1. The arteries in muscle are as much "end-arteries" as those in gut or brain; but in none of these cases are they strictly "end-arteries."
 2. If the blood-supply to a muscle is cut off locally (especially over large areas) death of masses of muscle may take place owing to the difficulty in re-establishment of the collateral blood-supply.
 3. During operations the blood-supply to muscles and inside muscles should be conserved in the most jealous fashion.
 4. When excising wounds of muscles, a knowledge of the internal arrangement and distribution of the arterial supply is essential to success. Take care to make the excision in such a way that the main vessels and branches of supply are not interfered with, otherwise much larger areas must be excised.
 5. Ischæmia of muscle due to damage of the arterial supply is a most important factor in the production of gas gangrene.
 6. Should a large artery supplying a muscle be damaged and the wound already the subject of "gas invasion," cut away the damaged muscle till definitely bleeding surfaces are exposed. Should the case, however, be early and not yet (clinically) "gas infected," excise the wound locally and do not sacrifice too much tissue. At the same time take care to relieve all tension locally so as to allow of early re-establishment of the circulation. (This may explain the advantage of "delayed primary suture" over "primary suture" in gunshot wounds.)
 7. In the case of muscles possessing only a single vessel of supply (e.g., crureus, gracilis), owing to the risk of cutting the main artery of supply inside the muscle it is wiser not to attempt excision of the track, but simply to clean out the track very carefully with strips of gauze. Before being satisfied with this course, however, make sure that the blood-supply is intact by seeing whether or no free bleeding occurs from a small incision made in the muscle at some distance from the wound.
 8. When dealing with muscles prone to "gas gangrene" take every step after operation to raise and keep raised the arterial tension.
 9. In "resuscitation cases" take care to slacken all tight bandages so as to allow as much blood as possible to reach any ischæmic masses of muscle by way of the fine collateral channels that exist.
- We wish to acknowledge our thanks to Colonel C. H. S. Frankau, D.S.O., A.M.S., consulting surgeon to the 5th Army, for the opportunity he most readily gave us for carrying out this work.

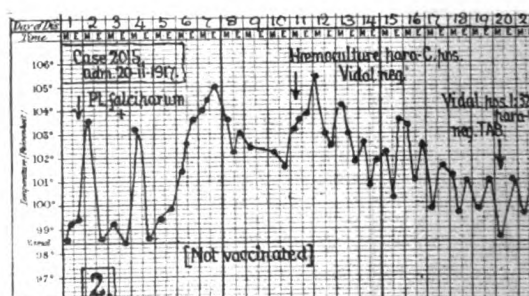
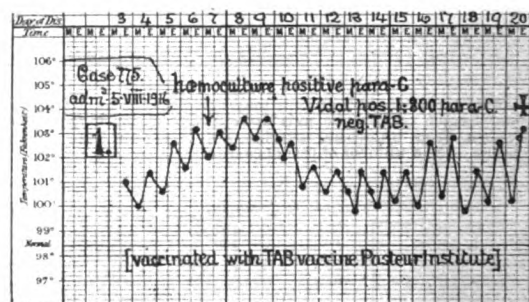
A NEW GERM OF PARATYPHOID.¹

By DR. L. HIRSCHFELD,

DOZENT OF THE UNIVERSITY OF ZÜRICH; DIRECTOR OF THE CENTRAL LABORATORY OF THE SERBIAN ARMY.

IN many of the specimens of blood sent to the laboratory to be examined for typhoid or paratyphoid, germs have been isolated by culture in bile which behaved, bacteriologically, like paratyphoid bacillus B, but were not in the least agglutinable by the corresponding specific serum. In August, 1916, I isolated such a strain from the blood of patient No. 775. The reaction of Widal with Eberth, paratyphoid A, and paratyphoid B was entirely negative in this case, whilst the serum of the patient agglutinated the germ in question, even in dilution 1 in 800. The serum of this patient has been employed since, along with the sera anti-Eberth, anti-paratyphoid A, and anti-paratyphoid B, for the serological differentiation of strains isolated in hæmoculture. With the help of this serum I have discovered in hæmoculture 11 more cases of the same serological individuality in the latter half of 1916, 5 further cases in 1917, and 2 cases in 1918. The relative scarcity in 1917 and 1918 is explained by the fact that the polyvalent vaccine (of Castellani), which I have prepared since the beginning of 1917 for the Serbian Army, contains this strain also.

The clinical picture, temperature, &c., of patients infected by this germ is that of paratyphoid fever. The temperature chart of the patient in question shows the classical febrile course (Chart 1). Chart 2 shows the febrile course of another



patient suffering from tropical malaria and typical paratyphoid. I emphasise the fact that the two patients did not react to Widal except with the germ in question, and therefore it was not a case of an infection superimposed on typhoid or paratyphoid, but solely an infection provoked by this germ. We have also observed cases less severe and less typical.

Characteristics of the Organism.

From a bacteriological point of view there is no difference between the germ in question and the bacillus paratyphoid B. We have proved the absence of gas and of acidity in lactose, the production of acid and gas in dextrose and mannite, the acidity in dulcitol with the production of gas retarded, acidity and production of gas in lævulose, and after the first production of acid further typical alkalinity in litmus milk.

¹ A paper read before the Inter-Allied Medical Society in Salonika on Dec. 10th, 1918.

Broth with neutral red becomes fluorescent. It darkens the medium with subacetate of lead. It does not produce indol.

The bacilli are endowed with typical movements and are Gram-negative. They are not agglutinated either by the agglutinating sera coming from the Pasteur Institute of Paris, the Lister Institute of London, the Greek Laboratory of Salonika, or by those which I brought with me from Switzerland, although all these sera possess agglutinating qualities in a high degree for paratyphoid B. On the other hand, the sera of the patients possess considerable agglutinating power towards this germ. The serum of a patient agglutinated with a dilution of 1 in 3000, though it did not in the least agglutinate the bacillus of Eberth, paratyphoid A, or paratyphoid B. The serum of rabbits immunised by the germ in question is absolutely specific for this strain. The serum that I employ in my laboratory agglutinates this strain up to 1 in 2000, while it does not agglutinate Eberth, paratyphoid A or paratyphoid B at all.

We may therefore consider this germ a serological variety of paratyphoid B provoking, clinically, paratyphoid fever. This bacillus can be very virulent. Besides finding the bacillus in patient 775, who died of the disease, I have isolated the same germ post mortem from the heart of a patient who succumbed to paratyphoid. This variety is more frequent in the Serbian Army than paratyphoid B. I give the monthly statistics from my laboratory:—

| | 1916. | | | | | | | | | | | | 1917. | | | | | | | | | | | | 1918. | | | | | | | | | | | | 1916. | | 1917. | | 1918. | |
|------------------------|-------|-------|-------|-------|-------|------|------|------|------|------|--------|--------|-------|-------|-------|------|-------|------|------|------|------|------|--------|--------|-------|-------|-------|------|-------|------|------|------|--------|-----|--------|-----|--------|----|-------|--|-------|--|
| | M.v. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | March. | April. | May | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | Feb. | March. | April. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. | Total. | % | Total. | % | Total. | % | | | | |
| No. of hæmoculture ... | 77 | 110 | 99 | 73 | 60 | 8 | 23 | 12 | 8 | 23 | 8 | 23 | 8 | 27 | 16 | 4 | 1 | 26 | 13 | 16 | — | — | — | — | — | — | — | — | — | — | — | — | — | 462 | — | 142 | — | 65 | — | | | |
| No. of positives ... | 17 | 36 | 39 | 11 | 7 | 1 | 7 | 2 | 1 | 1 | 1 | 1 | 1 | — | — | — | 1 | 2 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | 120 | — | 8 | — | 7 | — | | | | | |
| T. Eberth ... | 3 | 13 | 19 | 1 | 2 | — | 2 | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | 1 | — | — | — | — | 40 | 34·5 | 1 | 12·5 | 2 | — | | | | | |
| Para. A ... | 11 | 18 | 14 | 5 | 2 | 1 | 2 | 2 | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 55 | 43·0 | 1 | 12·5 | 1 | — | | | | | |
| Para. B ... | 1 | 5 | 3 | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9 | 7·7 | 1 | 12·5 | 2 | — | | | | | |
| Para. C ... | 1 | — | 1 | 5 | 2 | — | 3 | — | 1 | 1 | — | — | — | — | — | — | 2 | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | 12 | 10·3 | 5 | 62·5 | 2 | — | | | | | |
| Not defined ... | 1 | — | 2 | — | 1 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 4 | 4·0 | — | — | — | — | | | | | |
| Of Vaccinated ... | 2 | 2 | 2 | 5(4c) | 2(1c) | 1 | — | — | — | — | — | — | — | — | — | — | 1c | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | | | |
| posit. Not vaccinated | 2 | 2 | 2 | 6 | 5 | 1 | 6 | 2 | 1 | 1 | 1 | 1 | — | — | — | — | 1 | 1 | 1 | — | — | — | — | — | — | — | 2 | — | — | — | — | — | — | — | — | — | — | — | | | | |
| | I. | | | — | | | | | II. | | | | | III. | | | | | | | | | | | | IV. | | | | | | | | | | | | | | | | |

I.—Inoculated with French vaccines (T., para A and B). II., III., and IV.—Inoculated with Serbian vaccines (T., para. A, B, C, and cholera).

Further researches must decide whether in our case it is a question of a bacillus with new serological qualities or whether a comparison with atypical germs of paratyphoid B isolated in the epidemics of alimentary intoxication, epidemic jaundice, inagglutinable strains isolated during paratyphoids, &c., will show the identity of my bacillus with strains isolated elsewhere. This variety, distinguished by the same pathogenic properties as the paratyphoid bacilli, and provoking clinically a paratyphoid fever, it would be suitable to call the bacillus "paratyphoid C," and to separate it from the many serological varieties of the paratyphoid bacillus B, which only provoke alimentary intoxication.

A point of great diagnostic importance in this atypical bacillus of paratyphoid B is its serological constancy. For two years I have studied this question in respect to the germ, and having continually practised growing it I have made the following conclusions:—

In the Serbian Army we have to deal with three different serological varieties:—1. The pure paratyphoid bacillus C. The quality of not agglutinating except with serum paratyphoid C remains constant. 2. The pure paratyphoid B bacillus. The greater part of the bacilli of this category retain their specific agglutinability. I have seen those, however, which in addition to their agglutinability by anti-paratyphoid B serum acquire, at least for a time, the property of reacting with anti-paratyphoid C serum. One strain (No. 228) even lost its agglutinability with anti-paratyphoid B serum, and would only agglutinate in the last two examinations with anti-paratyphoid C serum. 3. The bacilli which were agglutinated from the beginning by the sera anti-paratyphoid B and anti-paratyphoid C, and which even after being carefully isolated remained agglutinated by the two sera, and in consequence possess these two agglutinable qualities, can be called "bacillus paratyphoid B, C" (5 cases). These bacilli have lost in the course of the two years their agglutinability with anti-paratyphoid B serum. It was not a question in these cases of an absolute loss of agglutinability, as these varieties preserved the property of reacting to serum anti-paratyphoid C to the same degree.

Our experiences partly confirm the observations of authors on the mutability of the species paratyphoid B. We have seen that a bacillus with the biochemical properties of the paratyphoid bacillus B can change its serological specific properties. It seems to us interesting that it is only some of the serological characteristics of the paratyphoid bacillus B which are capable of changing, while the agglutinability of other germs, above all paratyphoid C, remains constant.

The Question of Preventive Vaccination.

It is two years ago since I first discovered this germ in the blood of one of our Serbian patients. In August, 1916, I communicated the fact to the French Service de Santé. This atypical strain not having been notified by the laboratories of the Allies, this question did not appear to be of practical importance to any other Army than the Serbian.

Lately, with a Bulgarian patient of the Hospital of Petit Karabaroun I have been able to isolate the same germs by hæmoculture. The patient succumbed to the disease. The culture from the faeces and urine of this patient gave a pure and abundant growth of paratyphoid C. Lately we have seen the Widal reaction positive up to 1 in 400 with only paratyphoid C in the case of a Greek patient in the town; therefore this germ exists among the Bulgars, and probably throughout the Balkans. In the last case Professor

Vallardi, chief of the Italian Central Laboratory, discovered by hæmoculture a paratyphoid C bacillus which agglutinated with my anti-paratyphoid C serum which I gave him. I gave a culture of paratyphoid C to Colonel L. S. Dudgeon, R.A.M.C., who told me he had confirmed the serological peculiarities of my bacillus.

The question now arises whether the Allied armies occupying Bulgaria and Turkey are vaccinated against this species. I am not informed whether the vaccine employed in the East contains the local atypical bacilli also. As far as French vaccines are concerned I believe it is not so, for the following reasons: (1) The agglutinating sera of the Pasteur Institute, samples of which we received two months ago through the Medical Reserve, do not agglutinate paratyphoid C; (2) the Serbian Army was vaccinated in the month of May, 1916, by vaccines of the Pasteur Institute which contained Eberth, paratyphoid B, and paratyphoid A. In 1916 I saw eight cases of positive hæmoculture, although the patients had been vaccinated. Of these eight cases five were infected by paratyphoid C, one fatally.

Thus we see that the greater part of positive hæmocultures amongst vaccinated patients show paratyphoid C, in spite of the fact that generally paratyphoid C was in the minority. Since the end of 1916 the Serbian Army has been vaccinated with the vaccine prepared by me, which contains paratyphoid C in addition to Eberth, paratyphoid A and paratyphoid B. As a result we can announce the disappearance of this strain. All the positive hæmocultures since this time have been isolated from non-vaccinated subjects. Only one case of a vaccinated person showed very slight paratyphoid (fever lasting only three days). The efficiency of the vaccinations and the reactions, both local and general, has not been modified by the presence of these other bacilli in the vaccine. In view of the great practical importance of the question, I considered it my duty to publish these facts. I can put cultures of the paratyphoid C bacillus and its corresponding agglutinating serum at the disposal of any laboratories interested in the question.

Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A DINNER FORK IN THE STOMACH AND DUODENUM.

BY KENNETH A. LEES, F.R.C.S. ENG.,
SURGICAL REGISTRAR, ST. MARY'S HOSPITAL, PADDINGTON.

IN the following strange case of swallowing a fork the patient, a domestic servant, aged 25, had only recently arrived from the West of Ireland. It turned out to be a small dinner fork of the plated variety (6½ inches long, handle 4 inches).

The patient gave the following history. Having lost all her upper teeth, and having had no plate fitted, she was unable to masticate her food thoroughly. On Christmas Day she swallowed a portion of a giblet which had some difficulty in passing down the gullet. Later she vomited, during which the undigested meat "stuck in her throat" and caused difficulty in breathing. Thereupon she took a small dinner fork from the kitchen table and passed it down the throat, handle first. She dislodged the foreign body and removed the fork. The piece of meat, however, again stuck in the gullet lower down. On attempting the same manœuvre a second time she passed the



Radiogram of a fork in the stomach 48 hours after ingestion. The slight blurring at each end is due to active peristalsis.

handle of the fork "a long way down." To her dismay the constrictor muscles gripped the fork, and she gradually lost her hold upon the prongs and it disappeared.

The patient applied to the hospital for relief; her story was not readily believed, but it was decided to take an X ray picture. Some little delay occurred owing to the Christmas holiday, but on the 27th the photo was ready and showed a dinner fork in the stomach with the handle towards the pyloric end and the prongs towards the cardia. (See radiogram.)

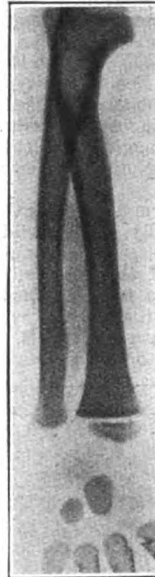
I was called to see her on the 27th at 6 o'clock. She was complaining of pain in the epigastrium, which was much worse when she ate anything, owing to peristalsis being excited. Nothing could be felt abnormal in the epigastrium. She was advised to have an operation for the removal of the fork. At 10.30 P.M. I did a gastrotomy through a 2-inch abdominal incision just to the right of the mid-line. There was no difficulty in identifying the foreign body. The shoulder of the fork was now lying against the pylorus, the prongs being in the stomach and the handle in the duodenum. It was removed prongs first through a ¾-inch incision in the anterior wall of the stomach. There were a few black patches on it, possibly from the action of the stomach acid. The subsequent suture of the organ was carried out in the ordinary way, the whole operation taking under 20 minutes. The patient made a successful recovery.

The accompanying radiogram was taken in the X ray department, St. Mary's Hospital. I am indebted to Mr. J. Ernest Lane for permission to publish the case.

(?) CONGENITAL SYNOSTOSIS.

BY ELIZABETH SLOAN CHESSER, M.B., CH.B. GLASG.

A CHILD of two years was brought to me on account of his inability to supinate the right forearm. The movements of pronation and semi-supination were accomplished without



Pronation.



Semi-supination.

Radiographs by Dr. Tindal Atkinson.

difficulty. When the child was offered a coin he flexed the elbow-joint and turned the hand backwards to receive the coin in the palm of the hand. Dr. Tindal Atkinson X rayed the case for me and the condition was found to be congenital fusion of radius and ulna at the upper third. No history of injury could be obtained.

Harley-street, W.

A CASE OF AN UNUSUAL CONTRACTURE OF THE PALMAR FASCIA.

BY G. DE SWIETOCZOWSKI, M.R.C.S., M.D.,
CIVIL SURGEON, 4TH LONDON GENERAL HOSPITAL, R.A.M.C. (T.)

I HAVE failed to find any reference to a case similar to the one described below in the largest libraries in London. The interest of the case is further increased by the diversity of opinions pronounced upon it.

The patient, 2nd Lieutenant, aged 21, was admitted to hospital in August, 1917. Some time previously a shell had burst close by and he was buried. A fragment hit his head (small scar over right side of occiput); slight cutaneous injuries on right side. A fortnight afterwards the knuckles of both hands swelled, and were slightly tender for 3-4 weeks; and when this subsided he noticed his hands to be deflected; later occasional pain in hands on exertion.

It was found that when extended all fingers of both hands deviated towards the ulnar side; there was loss of flexor power. The ulnar deflection was very much less obvious when the fists were clenched, the deviation increasing *pari passu* with the extension. Extension was limited at the metacarpo-phalangeal joints only; the inter-phalangeal joints were hyperextended. There was no loss of tactile sensation, and apparently no wasting of muscles of hands. On the contrary, the tips of the fingers looked fleshy and plump, and there were belly-like enlargements of soft tissues around the lower part of the digits, especially in middle and ring fingers. Some wasting of face, also loss of flesh generally. The gait was normal; no deformity of toes. No other joints affected. The radiograms of both hands were normal. Family history negative.

On passive movement only it was not possible to extend the fingers and also to undo the ulnar deviation. The ulnar band of the palmar fascia to each finger was seen to stand out like a fine cord. This could be demonstrated by

pulling the fingers towards the radial side, all together or separately. The condition was distinctly bilateral, being more marked in the right hand. Complete correction was not possible even under anaesthesia, during which the dragging on the palmar fascia was more marked.

In spite of the application of splints and vigorous treatment by massage and electricity, no change, except perhaps for the worse, was noticed for over three months.

The essential question was whether the case was organic or functional.

In favour of functional origin were the circumstances leading up to it; no history of a definite injury to the hands; loss of memory by patient once, soon after admission. Finally, the unusual and symmetrical deformity of hands

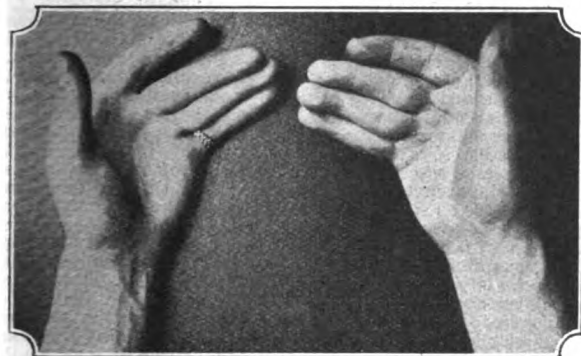


FIG. 1.—Condition of hands on admission August, 1917. (Maximum extension.) Note marked ulnar deflection.

had led several surgeons to support its functional nature. On the other hand, there was a complete absence of the usual concomitants of functional disorders, such as sensory disturbances, wasting of muscles (except in the face), and it was evident that the voluntary efforts were genuine. The symmetrical disposition is known in cases of hallux valgus, hammer-toe, and camptodactylia has been described amongst organic disorders. Yet there was no hypothermia nor acrocyanosis to indicate trophic disturbances.

The sole disorder known to be associated with the palmar fascia resulting in a contracture of the fingers was first described by Baron Dupuytren. This, however, results in a more or less complete flexion of the digits, mostly of the ring finger, without lateral deflection. Why the process of shortening should have in our case chosen just the ulnar fascicles and be symmetrical is difficult to answer. Perhaps the slight arthritic affection determined the course to a certain extent; for the appearance at the height of the

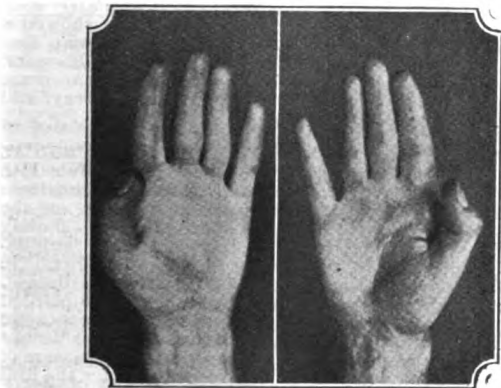


FIG. 2.—Condition of hands in July, 1918. (Maximum extension.) Note absence of ulnar deflection. Two crucial scars in the left and three in the right palm can be seen in relation to and above the lower palmar crease.

contracture was not unlike the deformity met with in advanced arthritis deformans. The interdigital folds (webs) were very marked.

Whatever the origin, the deformity must have resulted from a progressive fibrosis of the ulnar portions of the palmar fascia. The finer anatomical studies of the fascia reveal its intimate relations with the skin of the palm, with which it is connected by perpendicular fibres of great firmness.

Operation was resorted to in November, 1917.

Under general anaesthesia I put the affected portion of the palmar fascia of the left hand on the stretch by reducing the

ulnar deflection. A fine scalpel was introduced, first parallel to the fine prominent cord on the ulnar aspect and then at right angles to the original incision, severing the strings. At once the fingers could be easily straightened out and the deflection undone. The bleeding was (comparatively) not inconsiderable, despite care to avoid vessels and nerves. Dressing was applied and a specially constructed splint firmly tied on. Massage was resumed directly the incisions were lightly united. The result was very good. After a few months I attacked the right hand. Both hands can now be used freely, without even a suggestion of ulnar deflection. The splint is still worn at night on the right hand. The grip is steadily improving and there is not the slightest sign of relapse. It took exactly 12 months to cure the case.

This case reminds one strongly of the type of reflex nervous disorders described by Babinski and Froment, though I could not find anything resembling it amongst their pictures. Also, according to them such a contracture should be easily undone in deep anaesthesia. In conclusion, I wish to express my thanks to Lieutenant-Colonel Sir Nestor Tirard, Commanding Officer of the 4th London General Hospital, for his permission to publish the case. I am also much indebted to Captain E. B. Clayton for his untiring efforts in the massage department, and to Miss Berry for the execution of an ingenious splint.

St. John's Wood, N.W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

A MEETING of this section was held on Feb. 5th, Mr. W. T. HOLMES SPICER, the President, being in the chair.

Retinal Degeneration.—Ivory Exostosis of Orbit.

Mr. A. C. HUDSON exhibited a case of Retinal Degeneration following Intraocular Foreign Body. The ophthalmoscopic picture was that of folds in the internal limiting membrane of the retina, probably resulting from contusion of the eye. There were double contour reflex lines radiating from the macular region and having certain peculiarities, one of them being that they passed in front of certain of the retinal vessels and another that they were faintly stippled. He regarded the condition as pathological: there appeared to have been oedema of the whole retina and optic disc. Similar appearances have been seen by the exhibitor in a case of retinitis pigmentosa, resulting, in that patient, from traction on the retina. The lines were analogous to those seen in some posterior capsules after cataract extraction.—Mr. J. H. FISHER thought the history and appearance suggested that the lines were caused by some new formation, probably in the fundus oculi.—Mr. A. W. ORMOND considered that the amount of swelling was much greater in the upper than in the lower part of the disc and that it was pathological.

Mr. W. LANG and Colonel DONALD ARMOUR exhibited a youth from whom an Ivory Exostosis of the Orbit had been removed by Colonel Armour through the cranium. The patient attended at the Royal London Ophthalmic Hospital, where the members of the staff agreed it was a case for a general surgeon. Colonel Armour did the operation of removal. His problem was to remove the growth completely without doing damage to the cranial or orbital contents, and to leave as little facial disfigurement as possible. The skiagram led to his decision to use an osteoplastic flap turned over the frontal region, with its base at the supra-orbital margin, turning down bone and scalp together. That displayed the cranial portion of the tumour, which was found to be indenting the under surface of the frontal lobe. By pushing the dura and brain gently back over the summit of the tumour, he was able to see the whole extent of its cranial portion. Removal was effected in the main by means of hammer and chisel, the small portion of the orbital roof being attacked with cutting forceps. The recovery was practically uninterrupted and complete; there was very little external to indicate that an operation had been carried out. The growth must, he said, have originated in the frontal sinus, judging by the fact that the lower portion of the tumour was covered with mucous

membrane. Colonel Armour had in mind during the operation the possibility of the frontal sinus being involved, bearing in view the question of subsequent sepsis and the interference with respiratory movements, but at the operation there were no signs of that. On the day following the operation, however, and during the two or three succeeding days, there was an escape of blood from the nostril, which seemed to show some involvement of that sinus. It must, however, have been aseptic, as there was no further trouble. Colonel Armour was congratulated on his success.

Exhibition of Other Cases and Drawings.

Mr. J. F. CUNNINGHAM showed a case of Cartilaginous Tumour of the Roof of the Orbit, and Colonel ARMOUR advised removal.

Mr. ELMORE BREWERTON exhibited a patient with Angioma of the Retina. He regarded it as a form of cavernous angioma. The blood-vessels did not appear to be diseased; the disease seemed to be in an oval swelling in the periphery. The distension of the veins seemed to be purely mechanical. The small branches arising from the main artery were normal in size and general appearance. This was the patient's only eye, and there was reason to fear that the vein would at some time begin to leak; it already showed slight exudation at one point. There was evidently some congenital fault below. His other eye had been removed at the age of six years, as it was not only blind but painful.

Mr. ORMOND described a similar case.

Dr. W. WALLACE showed, by means of the epidiascope, a series of remarkable colour drawings showing Fundus Changes resulting from Severe War Injuries. He offered his collection to the profession.—He was warmly congratulated on them, and Colonel HERBERT PARSONS suggested they should constitute the nucleus of an ophthalmic atlas, which should be a permanent record of ophthalmological work done during the war.

Leber's Atrophy: Changes in Sella Turcica.—Sympathetic Ophthalmitis.

Dr. JAMES TAYLOR read a short paper on Changes in the Sella Turcica in Association with Leber's Atrophy. The speaker's purpose was to support, by means of this case, the contentions of Mr. Herbert Fisher, in his paper some months ago, that the symptoms of Leber's atrophy were associated with definite changes, seen skiagraphically, in the sella turcica. Skiagrams in this case showed departures from the normal in that structure, especially in the posterior and anterior parts of the glenoid fossa.—The PRESIDENT regarded the contribution as a distinct advance. It would be a comfort to know the origin of Leber's atrophy; it was scarcely likely that changes in the sella turcica represented the only abnormality. Ogilvie's series of observations some years ago on the deaths of large numbers of infants in families afflicted with Leber's disease seemed to point the direction in which inquiry should be made.—Mr. FISHER reminded the meeting of his paper in which he suggested that Leber's optic atrophy was due to implication of visual pathways by the pituitary body when it was undergoing excessive physiological changes in association with sexual development or decline. He would welcome every confirmation of that view. He had not seen material alterations in the bony outline of the sella turcica in every case of Leber's atrophy, but in one striking case, that of a woman aged 37 who reached the climacteric prematurely, a definite change was perceptible there.

Mr. R. FOSTER MOORE read a paper on a case of Sympathetic Ophthalmitis with Fundus Changes. He said that sympathetic ophthalmitis had been of rare occurrence during the war, therefore every such case was worth recording. In the present instance the fundus changes developed during the progress of the disease, and were visible throughout. The Wassermann test was negative, but five doses of neosalvarsan were given. It did not seem to have any influence on the disease. These cases showed a tendency to get well of themselves. The blood count was normal, and that was usually so in this disease, according to his experience.—Mr. FRANK JULER, who made the drawing of the case, confirmed the history and appearances described. When the case was seen last October the vitreous opacity was very marked indeed, so that the spots of choroiditis could not be clearly defined. A few weeks ago, when he next saw the case, the vitreous opacity had almost entirely cleared up, and the keratitis punctata had

quite disappeared. He asked whether the neosalvarsan injection seemed to play any part in the recovery from relapses.—Mr. MOORE replied that "606" did not seem to have any influence upon the course of the disease. The special Committee which the Ophthalmological Society appointed to investigate this condition years ago stated at the end of their report that mercurial inunctions had no decidedly bad effect on the sympathetic ophthalmitis.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—

A clinical meeting of this society was held at the West London Hospital on Feb. 7th, Lieutenant-Colonel E. M. Wilson, the President, being in the chair.—Dr. Reginald Morton exhibited a series of radiograms illustrating a short paper on the Most Common Site of Malignant Stricture of the (Esophagus). The author stated that during the previous nine years he had examined in the West London Hospital many cases where this condition was supposed to be present, a proportion of which gave a negative result. Ignoring these, there remained 66 cases of definite obstruction, practically all of a malignant character—less than half a dozen where the spasmodic element was the sole or predominating feature. By X-ray methods he thought that the most common site where malignant stricture of the oesophagus occurs will soon be decided. To get at this radiologists should agree on some uniform division of the oesophagus for purposes of description, and these divisions must have relation to familiar landmarks seen in this locality during X-ray examination. The division that he had adopted was chosen solely because he had found it convenient. The upper part lies above the sterno-clavicular joint; the next corresponds to the aortic arch, and extends from the sterno-clavicular joint to as far below the arch as the joint is above it; the third portion includes that part of the tube where it pierces the diaphragm, and the last one is the region immediately at and including the cardiac orifice. They might be described as (a) the upper, (b) the aortic, (c) the diaphragmatic, and (d) the cardiac portions. Applying this division to the present series of 66 cases (eliminating one that was purely spasmodic, as subsequent events proved) stricture occurred with equal frequency in the first and third portions, and also with practically equal frequency in the second and fourth portions. The disparity between the first pair and the second pair—"the odds and the evens"—is very striking, the latter being nearly four times that of the former. The actual figures were: (a) Upper (supra-sternal), 7; (b) aortic, 25; (c) diaphragmatic, 7; and (d) cardiac, 26 (total, 65).—Mr. Aslett Baldwin showed: 1. A case of Plastic Operation on Face for Deep Scarring, caused by a German hand grenade wound. Originally there was a drawing down of the left angle of the mouth with inability to open the jaws except to a slight extent. After operation an excellent result was obtained. 2. A woman from whom a large part of the tongue had been removed for a huge papilloma of about one year's growth which had almost completely filled the mouth. Speech was fairly good in spite of the large operation.—Mr. W. E. Fry showed a specimen of Endothelioma of the Tonsil. The woman died at the age of 64 after having had the growth for 18 years. Enucleation had been advised but refused ten years previously.—Dr. Arthur Saunders, Mr. Tyrrell Gray, and Dr. F. S. Palmer also showed cases.

NORTH LONDON MEDICAL AND CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 13th at the Great Northern Central Hospital. After official business had been taken, Mr. Ernest Shaw read a paper on the Relation of Pathology to Clinical Medicine. He shortly sketched the history of pathology in recent times, emphasising the epoch-marking work of Virchow and Koch in establishing the relationship between bacteria and disease. In describing the action and uses of sera, Mr. Shaw pointed out that as there were many varieties of the same organism an effective serum could only be made from those tissues affected by a particular variety. Hence "stock" sera were of little value. Although Jenner was responsible for the first general use of a vaccine in this country, we owed our modern knowledge of vaccine-therapy primarily to Koch. Mr. Shaw reviewed the diseases of special organs and tissues, showing how much the medical man—whether surgeon, physician, or general practitioner—owes to pathology, both in diagnosis and treatment. Having briefly classified the diseases of blood from the standpoint of the address, he gave several cases in detail to demonstrate how the microscope could often determine in a moment a disease which had defied the most expert clinician. Speaking of the value of blood-cultures, he insisted that the cerebro-spinal fluid also should always receive attention when any condition is present suggesting a lesion of the nervous system. Mr. Shaw justified his classification of tumours, from the surgical point of view, into "simple" and "malignant" by stating that the object of the physician or surgeon was simply to

know whether he was dealing with cancer or not. The method of immediate examination of morbid tissue was described, and failure attributed to faulty technique and ignorance of histology.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—The annual meeting of this society was held at St. Mary's Hospital, Manchester, on Jan. 17th, Dr. Miles Phillips, the President, in the chair.—The secretary's and treasurer's reports were adopted and the officers elected for another year.—Dr. H. Clifford (Manchester) exhibited a specimen of "Cyclops Foetus," whose single eye showed evidence of being formed of two fused together, and was situated below a prominence which represented the nose.—Dr. W. W. King (Sheffield) exhibited a specimen of "Recurrent Sarcoma after Removal of Apparently Simple Myomata." This patient had had a supravaginal hysterectomy performed five years previously, and when the abdomen was opened a lump was found about the size of a walnut, situated between the ureter and the pelvic wall. This lump was removed and also the cervix, and both exhibited undoubted evidence of sarcoma.—Dr. Fletcher Shaw (Manchester) exhibited "A Pair of Spencer Wells Forceps Removed Through the Vaginal Vault Twelve Years after an Abdominal Section" which had caused no symptoms to the patient, but had merely eroded through the vaginal vault and caused the patient to seek medical advice because of the inconvenience to coitus.—Dr. J. H. Willett (Liverpool) showed a specimen of "Spontaneous Enucleation of Uterine Fibroid." This was about the size of a Tangerine orange and was extruded a few days after labour. Dr. Willett also showed a specimen of "Torsion of the Uterus due to Fibroid."—Dr. W. K. Walls (Manchester) read notes upon "An Advanced Extra-uterine Pregnancy." The patient was seven months pregnant when first seen and a diagnosis of extra-uterine pregnancy was made. As the child was then alive it was decided to allow the pregnancy to continue in the hopes of getting a living child at or near to full term. Foetal heart sounds were observed daily for a few weeks and then as they had not been heard for a few days it was decided to open the abdomen. The patient was then about eight months pregnant, but unfortunately the child had been dead a few days. There was no particular difficulty in the operation and not much bleeding when the child was removed. The patient made a perfectly good recovery.—Dr. W. E. Fothergill (Manchester) read a note on "Some Aspects of the Gonorrhoeal Question."

SOCIÉTÉ DE BIOLOGIE, PARIS.—The following is a summary of some of the papers read at a meeting of this society held on Feb. 8th, 1919.

A. Vernes.—The Sero-Diagnosis of Syphilis.

La différence entre le sérum normal et le sérum syphilitique n'est qu'une question de degré. Il faut donc vérifier l'évolution dans le temps des résultats obtenus. Le véritable caractère sérologique pour le sérum d'un individu syphilitique est l'amplitude des oscillations observées.

G. Marinesco.—Histological Research on Oxydases.

L'action des oxydases dans les centres nerveux est mise en évidence par la réaction de Ulker et Graff. La recherche des oxydases existe donc dans presque toutes les glandes que j'ai examinées : hypophyse, thyroïde, foie, rein, rate, etc., et à ce point de vue il y a à établir une différence entre les animaux à sang chaud, les hétéothermes et hétéothermes. Chez ces derniers, la réaction est manifeste surtout dans le muscle cardiaque, elle est très faible dans les autres muscles où l'on trouve beaucoup de substances osmoréductrices.

Le Moigne, Sezary, Demonchy.—Therapeutic Action of Antigonococcus Lipo-Vaccine.

On injecte de sept à trente millions de gonocoques. Dans la grande majorité des cas d'uréthrite aiguë les symptômes douloureux cèdent rapidement ; l'écoulement disparaît en huit ou quinze jours. La goutte résiduelle ou la sérosité virulente qui peuvent persister disparaissent ensuite rapidement sur l'action d'une ou deux injections de nitrate d'argent. L'évolution est donc notablement accélérée. De plus, chez les malades qui ont pu suivre jusqu'au bout l'affection n'est jamais passée à la chronicité. L'action du lipo-vaccin sur l'orché-épididymite est rapidement frappante.

S. Marbaix.—"The Little Red Bacillus" of Influenza.

Nous avons étudié les caractères d'un petit bacille, Gram négatif, que nous avons trouvé dans l'épanchement purulent et hémorragique des grippes et dans l'exsudat rhino-pharyngien des méningitiques, des diphtériques et des aspuets. Ses colonies ressemblent à celles du méningocoque. Injecté en doses croissantes il tue le lapin avec bronchopneumonie, épanchements purulents et hémorragiques de la plèvre et du péritoine, et septicémies.

HOUSING IN MESOPOTAMIA.—The Military Governor of Baara has given a prize of Rs. 150 for the best papers on each of the following subjects : (a) The type of residential house best suited for Europeans in the lowlands of Mesopotamia ; (b) the type of residential house best suited for Arabs in the lowlands of Mesopotamia, having regard to their special customs.

Reviews and Notices of Books.

Use of Factory Statistics in the Investigation of Industrial Fatigue. By PHILIP SARGANT FLORENCE, M.A. Camb., Columbia University. London : Longmans, Green, and Co. 1918.

THE study of industrial fatigue through the use of factory records—in itself a fascinating subject—is just now of particular interest owing to the thought present in the minds of many that the period of industrial unrest through which we are passing owes its origin in no small way to nervous tension following upon more than four years of unparalleled strain. The incitement to effort has gone, the national danger is passed ; it is the morning after the dance ; and we are left vaguely wondering whether our efforts would not have been less fatiguing if more scientifically directed. Such direction, however, would have required a knowledge of fatigue in relation to physiology and the powers of normal recovery, and of pathology and the inception of disease, which is not in existence. A recognition of this fact has induced this country (through the establishment of an Industrial Fatigue Research Board) and America to undertake organised research into the whole subject.

We have before us an interesting volume recently published in America, and intended as a manual for field research. The work is clearly the result of prolonged labour. It contains much information and many references to work already done, and from this point of view would be investigators may be recommended to acquire it. The author, however, has succeeded in so magnifying difficulties that he paralyses thought rather than clarifies ideas, and he frequently hampers his exposition by inventing a terminology altogether unnecessary and lacking in exactitude ; and in this he is curiously reminiscent of those pre-Baconian philosophers who prized well-sounding terms beyond an honest fact and of that orator who held that words were meant to conceal thoughts.

An investigator about to embark on the study of industrial fatigue should consult this volume not merely for what it contains and tells him, but as in itself a subject for investigation. He must be ready while perusing it to use his own brains to extract the useful and to reject the unnecessary. As a first exercise for a budding investigator, therefore, the book is of value—a value directly in proportion to the reader's capacity for becoming an investigator. In the true spirit of investigation he must be prepared to search for and extract the useful, which is often submerged in a bewildering sea of obscure classification. Then let him without fear have recourse himself to the clear springs of observation which the author has dipped into and troubled.

This book treats of a new science—a science which, if it is to be of real value, must be studied by, and taught to, managers and employers of labour. The language used by its exponents must for this purpose be simple, clear, and free from all ambiguity. Otherwise the practical manager will turn his back on what will seem to him to be impracticable theories propounded by philosophical pedants. We hardly think that this book will induce any employer of labour to embark forthwith upon the study of industrial fatigue by an investigation of his own factory statistics.

Neurosyphilis: Modern Systematic Diagnosis and Treatment Presented in 137 Case-histories. By E. E. SOUTHARD, M.D., Bullard Professor of Neuro-pathology, Harvard Medical School ; and H. C. SOLOMON, M.D., Instructor in Neuro-pathology and in Psychiatry, Harvard Medical School. With an Introduction by J. J. PUTNAM, M.D., Professor Emeritus of Diseases of the Nervous System, Harvard Medical School. With many illustrations. London : Stanley Phillips ; Boston : W. M. Leonards. 1918. Pp 496. 21s. net.

WE have already had occasion to review other volumes in the case-history series to which this belongs, and have pointed out what appeared to us their merits and demerits. In the present instance we feel that the advantages of the method have been brought completely to outweigh its disadvantages. Briefly, a long series of cases of neuro-syphilis are offered to the reader in their essentials only, all non-essential clinical details being rigorously pruned ; salient

points are emphasised in heavy type; summaries are given at the end of each case, where desirable, and then comes a little series of questions and answers bearing on the diagnosis of the case, and perhaps on its treatment, or on any matter of interest it calls forth. The book sections are six in number: nature and forms of neuro-syphilis; systematic diagnosis of forms of neuro-syphilis; puzzles and errors in the diagnosis of neuro-syphilis; medico-legal and social neuro-syphilis; the treatment of neuro-syphilis; and neuro-syphilis and the war. Each section is illustrated by abundant clinical material. Further, scattered at convenient intervals through the book are "charts" consisting of salient features of neuro-syphilis tabulated as a sort of *memoria technica*; the headings, too, are often arranged in a fashion resembling the insets on some front pages in the newspapers of the day. Thus:—

"TABETIC NEUROSYPHILIS may produce symptoms chiefly if not entirely in the region supplied by the CERVICAL PLEXUS ('cervical tabes')."

or—

"The clinical symptoms of CHRONIC ALCOHOLISM are sometimes largely identical with those of PARTIC NEUROSYPHILIS ('general paresis')."

These indications of originality of presentation may or may not appeal to the conservative English reader; but they are no mere catch-penny attempt at "neuro-syphilis made easy," for our perusal of the book has shown that it contains a mass of solid clinical, pathological, and therapeutic information, thoroughly sifted, well arranged, and eminently practical in all its bearings. We congratulate the authors on the complete success of their experiment in book-making.

Archives of Neurology and Psychiatry. From the Pathological Laboratory of the London County Mental Hospitals. Edited by F. W. MOTT, M.D., F.R.S., &c. (Lieutenant-Colonel, R.A.M.C.T.). Vol. VII. 1918. London: P. S. King and Son. 10s. 6d.

THE latest volume of papers in neuro-pathology and psycho-pathology issued under the aegis of Dr. F. W. Mott represents the work which he and his colleagues have been prosecuting at the Maudsley Hospital, Denmark Hill. It contains some 12 communications, most, if not all, of which have already been published elsewhere, mainly in the *Transactions of the Royal Society of Medicine*, during the last three years. Here in convenient and compact form are reprinted Dr. Mott's valuable researches on shell shock and kindred subjects, including his Lettsomian lectures of 1916 on the effects of high explosives upon the central nervous system. In addition there are several useful papers on the interrelation of the endocrine glands and the nervous system both in its organic and functional aspect. The whole volume bears witness to the indefatigable spirit of research animating its editor and his collaborators, and worthily maintains the high level of previous volumes in the series.

Advanced Suggestion (Neuro-induction). By HAYDN BROWN, L.R.C.P. Edin., &c. London: Baillière, Tindall, and Cox. 1918. Pp. 342. 7s. 6d.

Hypnotic Suggestion and Psycho-therapeutics. By A. BETTS TAPLIN, L.R.O.P. Edin., late President of the Psycho-Medical Society of Great Britain. London: Simpkin, Marshall; Liverpool: Littlebury Brothers. 1918. Pp. 168. 10s. 6d.

OF making of books on psycho-therapy there seems to be no end. In so far as this is significant of wider application of psycho-therapeutic methods by the profession it is a healthy sign, for the employment of essentially similar methods under high-sounding names by unauthorised practitioners is certainly not decreasing, and there is always a section of the public which prefers the obscure, mysterious, and occult to straightforward, and therefore, presumably forsooth, less impressive and less convincing procedures. The main feature of suggestion-methods is their simplicity, too simple for the "high-brow" who seeks intellectual titillation in the garnishings of the faith-healer, the Christian scientist, the clairvoyant healer, and all the rest of them, whose very existence, as Mr. Haydn Brown says, constitutes a scathing criticism upon the shortcomings of the profession in the study and application of treatment by suggestion.

In the two books under review is contained, under somewhat differing presentations, a body of sound teaching on suggestion-therapy, illustrated by clinical examples of all sorts. Some of these are less impressive than others, and rather convey the idea of somewhat uncritical investigation of the material. Many, however, cannot fail to demonstrate to the sceptical the great practical value of treatment by frank suggestion in suitable cases. If the suggestion-therapist sometimes overstates his position by the exaggerated nature of his claims, this should not blind the physician to the genuineness of his achievements with many cases which "have seen all the best men" and been sent on "in desperation" to the psycho-therapist. Neither of the authors, who write of what they have seen and done, speaks enthusiastically of psycho-analysis as a therapeutic method, though both have had experience of it. The general contention seems to be that efficacious and enduring results can be obtained by simpler technique, that many neurotic cases have had no particular psychical traumata in their history, and that cases already psycho-analysed ineffectually have come to them for further treatment. As convenient text-books of unassuming pretensions they may be recommended to the profession for sympathetic consideration.

Neurological Clinics: Exercises in the Diagnosis of Diseases of the Nervous System. Edited by JOSEPH COLLINS, M.D. New York: Paul B. Hoeber. 1918. Pp. 271. \$3.

Dr. Joseph Collins and his colleagues at the Neurological Institute in New York have collected, from large material, a series of clinical cases offering practical lessons in diagnosis, since successful treatment obviously presupposes accurate diagnosis. The cases range through all the aspects of organic and functional neurology and include not a few classifiable as psychiatric. The majority present features of interest and show evidence of careful selection; a few seem to us to have been handled rather superficially, no doubt merely from a praiseworthy effort on the part of the writer at conciseness. There are some 41 cases in the book, which will, we believe, form profitable reading both for the general practitioner and the neurologist.

The Disease and Remedy of Sin. By the Rev. W. MACKINTOSH MACKAY, B.D. London, New York, Toronto: Hodder and Stoughton. Pp. 308. 7s. 6d.

IN his preface Mr. Mackay defines the scope of this book by describing it as an essay in the Psychology of Sin and Salvation from a medicinal standpoint. Christianity is everywhere regarded as the care and cure of spiritual disease. The result is a book that is original and suggestive, it abounds in medical terms and phrases, and shows the author as well read in philosophy, medicine, and ancient and modern Protestant theology. Sin, its causes, progress and effects, are treated as a physician treats disease; it is traced from its roots upwards in the first part of the book with exhaustive accuracy, while in the second part we have the remedy of sin under such headings as Conversion by Crisis, Conversion by Lysis (by which latter the author means the gradual turning of the life towards God), spiritual surgery in cases of chronic sins, mortal sins, and sins of compromise, the knife being absolute renunciation; any return to the sin so treated is likened to a cancer which recurs after an operation. "The spiritual surgeon should cut off all adhesions as well as the noxious growth."

In his chapter on the Divine Surgery of Pain the author reaches his highest point; his whole treatment of pain is illuminating, especially in his analysis of Hinton's *Mystery of Pain*, in which he lays his finger unerringly on the weak spot in that work—namely, Hinton's ignorance of the fact that the Incarnation was meant, amongst other things, to teach us that God does suffer pain. The book is in places brilliant, everywhere thoughtful, and yet, as from its very nature perhaps it was bound to do, it leaves us cold; it is a pitiless production.

On p. 15 Mr. Mackay refers to the confessional in the Roman Church, and deplors the lack of such a system in other communions. He appears to be ignorant of the provisions for voluntary confession which are laid down in the Book of Common Prayer. The book, however, is one which no earnest minister of religion can afford to miss, and it will be found helpful to anyone who is called upon to be a director of souls.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 22, 1919.

A New Epidemic Diseases Order and its Effect.

THE Local Government Board have, under the Public Health Acts, issued an Order¹ relating to the prevention of certain epidemic diseases which comes into operation on March 1st and requires to be widely known by men in consulting and general practice, as well as by the public health authorities and medical officers of health to whom it has been officially circulated. By one provision of this Order the diseases termed "acute primary pneumonia" and "acute influenzal pneumonia" are made notifiable to the medical officer of health of the district, and every medical practitioner who becomes aware that a person on whom he is in professional attendance is suffering from these forms of pneumonia is required forthwith to notify the medical officer of health of the district on the same form and in the same manner as for scarlet fever or other acute infectious diseases which are already notifiable. It should be noted that, as no alteration has been made in the Notification of Infectious Disease Regulations of 1918 or in the Emergency Provisions Act of 1916, this duty is not accompanied by any special remuneration, though the general obligation of the local authority to pay one shilling in respect of each notification will apply to those reported under the new Order. In using the special emergency powers of Section 130 of the Public Health Act of 1875 to require notification throughout England and Wales, and to give the medical officer of health of the district the duty of taking "such action as he considers necessary and desirable" in each notified case "to prevent the spread of infection and remove conditions favourable to infection," the Order merely follows the practice by which in recent years various other diseases, such as tuberculosis and measles, have been made notifiable under this Act, rather than by the use of the Infectious Diseases (Notification) Acts. In the case of acute and influenzal pneumonia nothing further is required by the Order. The information obtained by notification should have statistical value when the next pandemic of influenza arrives, as the course of its attendant pneumonia can then be followed right through the various phases of prevalence of influenza itself. Meanwhile it will, no doubt, aid knowledge by promoting the study of the circumstances in which pneumonia occurs, and in certain districts at least it should be helpful to local authorities as a guide to the selection of cases in which to provide medical or nursing assistance. This is at present the chief useful result obtained from the notification of measles.

The other infectious diseases made notifiable under this Order are malaria, dysentery (both bacillary and amœbic), and trench fever. These are diseases hitherto of relatively rare occurrence in this country, but which need to be specially provided against in the circumstances attending demobilisation and the resumption of normal traffic with foreign countries after the war. In regard to these diseases, as well as to enteric fever, relapsing fever, and typhus, which are already notifiable, the Order makes a number of specific provisions, based on their known method of spread, which are to be applied in all notified cases. When a medical officer of health becomes aware, by notification or otherwise, of a case of typhus, relapsing fever, or trench fever, he is empowered to take special measures for the destruction of lice, and he can give a notice, addressed to the head of the family or to any person in charge of or in attendance on the patient, or to any other occupant of the building, or to any person with whom the patient has been recently in contact, requiring that person to take, immediately and to the satisfaction of the medical officer of health, specified measures to secure the complete destruction of lice and their products. Action for the same purpose can be required of persons having the control or management of any building, of the person who receives the rent in the case of lodging-houses, and of the master of a ship when a port sanitary district is concerned. These notices must be complied with under risk of substantial penalties. The segregation of contacts until they and their clothing have been completely freed from lice can be similarly enforced. Each case itself must be treated in a suitable hospital unless the medical officer of health is satisfied that treatment elsewhere will be carried out with all such precautions as are necessary to prevent the spread of the disease. The same provisions in regard to hospital treatment are made in the case of dysentery, and special clauses are added, applicable to enteric fever as well as to dysentery, which deal with risks of infection arising from the handling of food. The notices which can be given in the case of these diseases may require the person specified within them to discontinue any occupation connected with the preparation or handling of food or drink for human consumption, or to take suitable measures in respect to cleansing, disinfection, disposal of excreta, destruction of flies, and other matters. A very welcome provision is that relating to carriers of enteric fever or dysentery infection. If there are grounds to suspect that a person engaged in the milk trade or in the preparation of other food is a carrier, facilities are to be given to the medical officer of health at his place of occupation to obtain specimens for examination. When a dangerous carrier is identified on evidence that is considered sufficient the medical officer of health may again proceed by notice, addressed both to the suspected person and to the responsible manager of the business, to prevent the former from continuing in employment involving the preparation and handling of food.

¹ Local Government Board Order P.H. 2A, 1919: "The Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919." The accompanying official circular is reproduced substantially on p. 309.

All cases of malaria are made notifiable (unless they are known to have previously been notified in the same district within six months), but the special action required of the medical officer of health is limited to those cases in which he considers that steps should be taken to prevent the spread of infection. The greater number of notified cases will be in soldiers and others who have contracted infection abroad and who then relapse in this country: when this fact has been ascertained nothing further will as a rule be required of the medical officer of health. If, however, there is evidence of the disease being contracted locally, he is required to take all practicable steps to see that malarial cases in his area are supplied with mosquito netting, receive necessary quinine treatment, and proper advice as to precautions. On the occurrence of a focus of indigenous malaria (defined as two or more cases contracted within the district) the local authority may be required by the Local Government Board to appoint and pay an approved medical practitioner for house-to-house visits, collection of blood films, and supervision of household precautions. Section 130 of the Public Health Act of 1875, under which this Order is made, was introduced into that Act with the special object of taking emergency measures against imported cholera, and it is interesting to see that after this lapse of time it has proved possible to utilise this section to provide a code of action which is based on scientific knowledge of the prevention of the diseases now in question. The application of the regulations evidently calls for close expert guidance from the centre if they are to be most effectively used. Medical officers of health will need the advice of those who have specialised in the study of diseases such as malaria and dysentery or have special knowledge of the bacteriology of carriers. It is presumably with this object that the Order requires each individual case of trench fever, typhus, relapsing fever, or malaria of indigenous origin to be reported at once by the medical officer of health to the Local Government Board, as well as any outbreak of dysentery. The effect of the Order in practice has yet to be ascertained, but it is evident that its success will largely depend on the opportunities afforded to the epidemiologists of the Local Government Board or of the future Ministry of Health to observe and direct its working. But the spade-work, the diagnosis, will have to be done by the general practitioner, and for shilling fees, unless the public conscience is aroused at the degrading discrepancy between the size of the payment and the importance and responsibility of the judgment which sets this official machinery in motion.

A Tuberculosis Service.

THE meeting held at the Royal Society of Medicine on Saturday last to consider a scheme for the formation of a complete and self-contained tuberculosis service was not a large one, but it was widely representative of the various branches of tuberculosis practice. The meeting was summoned by the Tuberculosis Society, which had previously

circulated a draft scheme amongst its members, and this draft, after some modification in detail, was passed substantially in the form submitted by the unanimous vote of those present. Accordingly, a deputation was arranged to wait upon the Prime Minister and the Minister in charge of the Ministry of Health Bill. The scheme, which we print in full on p. 310, asks for a special department of the Ministry of Health to deal with the prevention and treatment of tuberculosis. It asks that the personnel of this department should include medical commissioners, filled from the ranks of the tuberculosis service, who, along with other commissioners appointed by the Crown on account of their special knowledge and experience, should advise a committee representing medicine, the public health services, local authorities, the Ministry of Pensions, trade unions, Friendly Societies, and other organisations interested in social welfare. No doubt will arise in regard to the need for coöperation among all these agencies. The work of controlling tuberculosis has been hampered in one district by lack of funds, in another by deficient resident accommodation, in a third by want of any organisation for after-care, in a fourth by apathy on the part of the public health authority, and in a fifth by failure to coöperate with the general practitioner. All these defects must be remedied if success is to be achieved.

But while admitting the necessity for coöperation in all branches of tuberculosis work, the amateur administrator might argue, with some show of reason, that no far-reaching scheme of prevention and treatment should be organised from top to bottom, from patient to Government department, for the sake of one pathogenic organism. Surely, he would say, the Pfeiffer bacillus or the pneumococcus or the new filter-passer has a similar claim to a special anti-service. But in practice, tuberculosis is a special case. It is a life-long infecting agent of relatively low infective power, raising problems of prevention and treatment which exist side by side and must be dealt with concurrently. Tuberculosis seems, in fact, to provide at present the most promising field for that combination of clinical and administrative service for the development of which all eyes are turned towards the Ministry of Health. The mechanism of such a tuberculosis service may in the future be found applicable to other than the white plague. If so, pneumonia and influenza, standing as they do in such close relation to the problems of tuberculosis, might then be associated with it. But that is no reason for hesitating to make a beginning with the coördination of measures against tuberculosis.

Granted that a special tuberculosis service has its justification at the present time, it is no less certain that its relation to the general public health service must be an intimate one, closer perhaps than Saturday's meeting had in mind. There may be, it is true, a certain number of medical officers of health who are inclined to treat the tuberculosis officer as a clinical tyro; there may be also inexperienced tuberculosis officers with bees in their bonnets, whose acquaintance with the ways of local authorities and with the mechanism neces-

sary to deal with social conditions leaves something to be desired. It is obviously expedient to make the tuberculosis officer responsible for the administration of his own special work; but when all is said and done it would be impossible for him alone to provide those large measures of reconstruction—clean streets, open spaces, proper housing—which are destined to play such a large part in raising the standard of public health on which the prevention of all disease largely depends. The tuberculosis problem will not be solved by working in a water-tight compartment. The spirit of the times is against it. Any such proposal would be reactionary, not reconstructive. We see little hope of lasting benefit from any scheme which does not make the local authority (whether county or county borough) the coördinating centre of all hygienic and social measures in its own area. There is a movement on foot to enlarge the Public Health Service along the lines of the proposed changes in the constitution of the Society of Medical Officers of Health. This is more urgent at the moment than scales of salaries and commissionerships.

Annotations.

"No quid nimis."

THE RETURN OF INFLUENZA.

To speak of the return of influenza is to imply that this multiform, obstinate, and in many directions mysterious epidemic, whose manifestations among us at two epochs in 1918 were so serious, had definitely gone, and this, we are certain, should not be assumed. We have not enough knowledge. Major Astor, Parliamentary Secretary to the Local Government Board, stated in the House on Tuesday last, in reply to a question, that influenza may be combated by continuous research and intelligence work: until such endeavours have borne fruit, it must be impossible to say for certain either how long the infection of influenza may linger in a community, or what are the circumstances which conduce to its quick removal or to its long persistence. Many of these circumstances are assuredly common to the natural history of all epidemic visitations, but it is proven, if only by the differing views of expert pathologists, that in the case of influenza we do not yet know the whole story. What, for example, induces changes in age-incidence? And how far is immunity conferred by previous attack or other pathological conditions? The extent to which the disease is now prevalent among us can be gauged from sporadic reports, as well as from such definite figures as those furnished in our summary of vital statistics (see p. 311), and undoubtedly many communities are faced with a return of the troubles which they were experiencing last autumn. While medical men are working along useful lines for prevention and with therapeutic methods which sore experience has perfected, it is the duty of the public to avoid as far as possible the spread of the mischief. The local health authorities may take steps for lessening the public opportunities of infection, but they will be useless till the public is ready to institute for themselves a system of domestic inspection by which prompt medical attention is obtained. Where the

public is intelligent the medical service, public and private, becomes doubly efficacious, while remarkable results have been and will be obtained from intelligent nursing. How many serious cases have been saved, and how many less serious cases have been lost, by the respective presence or absence of the competent nurse would be a bold piece of guessing, but, without attempting any exact reply, we are convinced, on the numerous reports which we have received, that when influenza has got a definite hold upon a patient it is the nurse, and anxious domestic care, which turn the scale most frequently in the patient's favour. Major Astor stated the intention of the Local Government Board and other bodies to assist in the provision of medical nursing and domestic aid to those attacked, and any activity displayed along this line will be fully rewarded. Research work has been proceeding for a long time in the hands of many observers, and the medical officers of the Local Government Board are at the present moment in active coöperation with other experts outside the Department by means of a committee which meets at short and regular intervals. All this is most valuable for the direction of preventive measures, both now and in future epidemics; but, in the place where we stand to-day, the two urgent things are the assistance of the medical man by the intelligent coöperation of the public, and the assistance of the patient by the provision of adequate nursing. A memorandum will be issued by the Local Government Board this week recommending the steps which should be taken by the local authorities and also by the public. This memorandum, we understand, will be of a practical nature.

COORDINATION OF MEDICAL SERVICE: SIR GEORGE NEWMAN'S APPOINTMENT.

Sir George Newman, Chief Medical Officer of the Board of Education, has been appointed Principal Medical Officer to the Local Government Board, retaining his position at the Board of Education, where he is also Medical Assessor to the Universities Branch of the Board. The post of Principal Medical Officer to the Local Government Board is a new one, and Sir George Newman will have the position of a Secretary of the Board with administrative duties and responsibilities in respect of the work of his department. It should be clearly understood that this is not the post of "Medical Officer" which was recently held by Sir Arthur Newsholme. Nothing in the new appointment, we are glad to say, prevents the existing medical staff of the Local Government Board, who have been bearing the burden within the department of the public sanitary service, from being advanced to a post of the same standing, if not with the same title, as that recently vacated by Sir Arthur Newsholme. The appointment of Sir George Newman as principal medical officer of the Board is a direct step towards that coördination of public medical service, which has been stated to be the primary object of the Ministry of Health. Sir George Newman has had practical experience, both urban and rural, in the work of the medical officer of health, while he is a recognised authority in school hygiene. Moreover, in all questions of medical and educational administration he has shown himself on the side of the general practitioner, recognising that a medical department can only be run satisfactorily from the top if the real executive, the

private doctor, is given fair play. Dr. Addison and Sir George Newman are in a previously unrealised position—two doctors they are, in their respective spheres, controlling a public medical department. In the present position of the medical profession their opportunities for good are literally huge.

THE ROYAL SOCIETY OF MEDICINE: A SUMMER CONGRESS OF LARYNGOLOGY.

THE Section of Laryngology of the Royal Society of Medicine is showing increased energy with the return of many of its members from the war. Its meetings have had large attendances during the war, being favoured by the presence of many American and over-seas laryngologists. It has therefore decided to convert its annual gathering in May into something more than the usual clinical meeting. On Friday, May 2nd, there will therefore be a summer congress; papers will be read in the morning, demonstrations of cases, operations, specimens, instruments will take place in the afternoon; and it is proposed to arrange a pathological museum of specimens relating to the subject. We understand that all over-sea laryngologists will be heartily welcomed. Those who intend to read papers or join in the discussion are requested to notify the honorary secretaries of the Section not later than March 3rd.

THE QUALITY OF COMMERCIAL VACCINE LYMPH.

IN our correspondence columns we print a letter dealing with recent experience as to the inferior quality of certain samples of commercial vaccine lymph in comparison with that which is issued gratuitously to public vaccinators from the Local Government Board's lymph establishment. This, unfortunately, is by no means the first occasion on which complaint as to the potency of commercial lymph has originated with practitioners, who perforce have to rely on trade sources for their supply. Our correspondent adds to the value of his letter by offering suggestions for meeting the difficulties of the case, urging either the institution of adequate control by Government of trade lymph supplies, or more drastic procedure involving suppression of commercial lymph establishments and instituting gratuitous distribution of Government lymph to all medical practitioners, whether public vaccinators or not. Dissatisfaction with the potency and quality of commercial lymph supplies is, as we have said, not of recent origin, as reference to our own columns in previous years will testify. And from time to time, since glycerinated lymph for use in the public services was first issued by the Government, attempts have been made to bring pressure to bear in Parliament with the object of obtaining official action along the lines of one or both of the schemes advocated by our correspondent. As a matter of fact, the more important private vaccine establishments in this country have, we believe, been officially inspected on occasion; but as regards the considerable supplies of vaccine lymph imported into this country from abroad, it is obviously impossible for the Government to exercise control short of putting a stop to such importation altogether. In the House of Commons, replies to a suggestion that the Government should itself provide all the lymph required for purposes of vaccination have generally been to the effect that it was undesirable to take steps to the detriment of trade interests, especially in view of

possibility that in time of pressure the Government might need to enlist the assistance of firms engaged commercially in the production of vaccine lymph. On the other hand, there is much to be said for the contention that in view of State enactments requiring performance of vaccination as a preventive measure, every medical practitioner ought to be in a position to obtain supplies of Government lymph; or, alternatively, of glycerinated lymph produced under conditions of State control and supervision, such as to ensure clinical activity and bacteriological purity as they are shown in the lymph issued from the laboratories of the Local Government Board. During the present war lymph for the vaccination of our military forces has been issued from these laboratories to the extent of some millions of doses, while a stock of at least 1½ million doses is reported to be available in cold storage in case of emergency. In these circumstances it would seem that in the event of the Government deciding to make themselves solely responsible for the production and issue of vaccine lymph in this country, no serious difficulty as to shortage of supplies need be anticipated.

THE EUROPEAN FOOD SITUATION.

WE understand that Lord Parmoor's letter dealing with the facts of the European famine¹ was circulated widely among leading members of the medical profession, along with a summary of these facts, and that a large degree of unanimity was found in the replies to the questions. The first question, directed to the credibility of the reports of starvation, was not answered inasmuch as the medical profession, as such, makes no claim to special sources of information or to any special power of sifting the evidence obtained. But replies, where received, were at one in affirming the permanent ill-effects to be expected from chronic starvation prevailing among the children and young people of all the nations to the east of the Rhine. The Fight the Famine Council has only to establish the existence of this chronic starvation to have the whole of the medical profession on their side in regard to its ill-effects on the coming generation and the urgency of the need to prevent this crippling of a whole continent. Obviously the most important single measure is to ensure the supply of sufficient food to the babies and young children, milk being the simplest form in which this provision can be made, or, failing this, the supply of vegetable fats in some convenient form. From the statements which have reached us we believe that an urgent need does exist, and that the medical profession can usefully educate public opinion in regard to this need. The information section of the Fight the Famine Council has its temporary office at 4, Barton-street, London, S.W.1.

MISS EVA LUCKES.

THE medical world, and the nursing world in particular, will extend the deepest sympathy to the London Hospital in the loss sustained by the death of Miss Eva Luckes, the matron of the hospital. Miss Luckes was educated at Cheltenham College, took her nurse's training at Westminster Hospital, and was appointed matron to the London Hospital in the year 1880, when she was only 26 years old, and had therefore 37 years of strenuous work in

¹ THE LANCET, Jan. 25th, p. 148.

and for the institution until death claimed her at the age of 63. Few of us realise what the conditions of nursing were in her youth. There was no definite scheme of training provided, the pay was paltry, the food was poor and insufficient, and what are now regarded as essentials of civilised life, such as the privacy of a bedroom, or at least of a cubicle, and adequate bathroom accommodation, were then wholly wanting. Miss Luckes on her appointment as matron at once set to work to improve the home condition of the nurses by the institution of cubicles and a proper dietary, and shortly afterwards tackled the question of training by introducing three courses of lectures on general nursing and on the special nursing of medical and surgical cases. Miss Luckes was thus a great and good friend to her own generation, and we cannot blame her for lacking prophetic vision in regard to the future. This limitation led her to set her face firmly against a recognised curriculum of nursing training extending over a fixed number of years, against any qualifying examination, or the registration of such qualifications. Her friends sometimes wondered that one who had done so much for her profession should halt at the point where measures might be taken to place that profession in line with others, protecting the trained nurse and the public from the semi-trained and handy woman. It is not our wish, however, to make her death the text of a discussion on this subject—her views are known, and so is their defence. Miss Luckes's work received official recognition during her life-time. She was appointed Lady of Grace to the Order of St. John of Jerusalem, she received the First Class of the Royal Red Cross, and quite recently the C.B.E. Her "Text-book of Nursing" and her "Lectures to Sisters" are well known and appreciated. The unbounded confidence in her and the affection of her nurses were openly displayed.

THE DISADVANTAGE OF BEING HEALTHY.

LAST week in our correspondence columns Dr. M. MacRae, of Bloemfontein, recorded his observation that in Cape Town, during the recent epidemic of influenza, patients with a previous history of chronic catarrhal conditions of the lungs bore the disease well. This disadvantage of being healthy has received a certain amount of support from other scattered observations, similar to those recorded in a letter this week by Dr. W. H. Dickinson, tuberculosis medical officer at Newcastle-upon-Tyne. In one London chest hospital the first influenza wave left almost all the occupants of beds unscathed, and although during the autumnal wave a number of rapidly fatal cases occurred they were mostly admitted with pneumonia already developed. In a thesis on the Clinical Significance of Opsonins circulated in 1907, E. C. Morland noted that six tuberculous patients with slight influenzal infection suffered no diminution of opsonic power while their (healthy) medical attendant had a severe attack which brought down his index to the low value of 0.68.

The *Boston Medical and Surgical Journal* of Jan. 16th contains a remarkable paper by Dr. D. B. Armstrong dealing with the same point. He refers to the fact, so vividly impressed upon us during the last few months, that influenza attacks with special virulence and causes a high mortality among those in the prime of life, in the best physical condition, and most free from previous disease. This difference between the strong and the weak, Dr. Armstrong adds, appears to be due not to the fact

that the former are predisposed to influenza, but that the latter are in some way protected against it. In Framingham, Mass., the organisation of the "Community Health and Tuberculosis Demonstration" furnishes reliable statistics on the point. In the recent first epidemic of influenza about 16 per cent. of the entire population were attacked, while only 4 per cent. of the tuberculous portion were. Moreover, most of the tuberculous persons had the disease in an arrested form and were going about and working, and therefore were as much exposed to infection as the remaining part of the population. Indeed, in the arrested cases the incidence was only 2 per cent. Figures from other communities presented at Chicago bear out the Framingham experience. The fatality rate showed the same contrast as the incidence rate; other observations are also in agreement. It is stated that in Washington and St. Louis, where there are large negro populations, influenza, fatal and otherwise, was relatively much less prevalent among the negroes than the whites. The high rate of tuberculosis among negroes is well known. American army medical officers have frequently said that in the camps the northern boy lived while the southern boy died; the city boy lived while the country boy died. Was this due to the fact that the one was more frequently tuberculised than the other? It has been stated that this greater susceptibility of the healthy is true for all types of acute infection. Thus in typhoid epidemics it has been observed that the big, strong, healthy individual falls the readiest victim to fatal disease. But may not this be due to the fact that typhoid infection lowers the resistance to acute respiratory disease and that it is to this complication, as in the case of influenza, the healthy individual succumbs? Thus the suggestion is that a kind of vaccination against acute respiratory disease results from chronic respiratory disease. This form of immunity may, as indicated above, have a relation to race. Framingham statistics showed that the incidence of tuberculosis for the whole population was 2.2 per cent., but for the Italian part only 0.5, while for those of Irish stock it was 4.9 per cent. In the influenza epidemic, on the other hand, there was four times as much influenza and pneumonia among the Italians as among the rest of the community, made up in large part of Irish and Irish-American stock. Should subsequent investigation prove that chronic respiratory disease, particularly tuberculosis, regardless of the race factor, in a measure protects against acute respiratory disease, what is the practical bearing? The disadvantages of chronic disease certainly outweigh any advantages conferred by protection against acute disease. Dr. Armstrong's view is that the solution should be found, as in the case of small-pox, in some form of artificial immunisation. Anti-influenzal vaccination thus has its supporters in many lands.

THE INDIGENOUS DRUGS OF INDIA.

IN a leading article in *THE LANCET* of Dec. 28th, 1918, we referred to a movement begun by the Government of Bombay in the direction of establishing a pharmacological laboratory and research institute for the investigation of drugs, and more particularly the indigenous drugs of India. We have recently received a copy of a pamphlet written by Mr. J. C. Ghosh, pharmaceutical chemist in the Government Medical Stores, Madras, and published by Messrs. Butterworth and Co. (India), of Calcutta, which deals with the scientific cultivation

and manufacture of indigenous drugs in India, with suggestions for the development of new industries. The resources of the country are evident when the writer points out in a list of drugs recognised by the British Pharmacopœia that 50 per cent. of the drugs are indigenous to India and Ceylon, and that nearly the whole of the rest could be cultivated. Amongst these are such valuable drugs as belladonna, digitalis, hyoscyamus, ipecacuanha, jalap, and podophyllum, but there is little doubt that the list could be extended to other plants by a plan of cultivation on the congenial soil presented by the great continent. Mr. Ghosh has done a good service in showing in what valuable directions developments could be made to go. He suggests the employment officially of a body of trained analysts and the adoption of a course of practical training in not only analytical but in manufacturing work. The latter, of course, includes the details in connexion with the economic extraction of active principles—alkaloids, glucosides, and so forth. With these arrangements set on foot he sees a new opening for the educated Indian as well as the growth of a valuable industry. India, like other of our possessions, has largely relied upon the supply of drugs from abroad, and that fact was made acute when the war broke out. The Indian Government may now well turn its serious attention to the question of realising its own home botanical assets, as brought to light in the pamphlet referred to.

A MEDICAL SCHOOL IN THE FAR EAST.

AN important development of medical education in Northern China is taking place at Tsinanfu, the capital of the province of Shantung. Here in 1904 was established the Shantung Christian University. Two missions, the American Presbyterian and the British Baptist, were concerned in the enterprise, which was nothing less than the setting up of a modern medical school, the medium of instruction being the Chinese language. Difficulties were encountered at the outset, but the promoters refused discouragement, and in 1910 commodious school premises were opened, to which four years later a well-equipped hospital of 118 beds was added. By arrangement with the China Medical Board of the Rockefeller Foundation a large body of medical students was transferred from the Union Medical College in Peking to Tsinanfu in 1916, new laboratories being added at the same time to the original school building. The China Medical Missionary Association urged upon all missionary societies in the country the policy of concentrating at the Tsinanfu school, and the British Advisory Board of Medical Missions endorsed the proposal. Last year a British joint board, representing four co-operating societies—namely, the Baptist Missionary Society, the London Missionary Society, the Society for the Propagation of the Gospel, and the Wesleyan Methodist Missionary Society—was formed in London with the object of promoting the efficiency of the medical school. The board includes in its membership Sir Alfred Pearce Gould, Professor Alexander Macalister, and Sir William Osler.

The Tsinanfu Medical School affords opportunity for service to any who desire to give themselves to medical missionary work in China. The students are drawn from all over the vast republic, and not only are the missionary possibilities very great, but the various professorships afford an attractive field for research and the study of diseases but little known in Europe or America. At the present

moment there are vacancies on the teaching staff, which were enumerated last week in our advertisement columns, and the joint board are anxious to find British candidates to fill them. The great need for western medicine in China is made apparent when consideration is given to the system of native practice, which has prevailed in China for many centuries. It has been possible for anyone to set up as a physician, and the old-fashioned Chinese practitioner has been subject to no legal requirements. Although much good has no doubt been done through a knowledge of herbs, anything like a scientific basis for the investigation and diagnosis of disease has been unknown. An old Chinese chart shows the œsophagus passing through the heart, thence to the liver, and from there to the stomach. Imaginative anatomy leads to disastrous surgery. One of the commonest methods of treatment in China has been that of acupuncture; again and again important organs have been punctured with dirty needles, owing to the superstitious notion that the "Evil Spirit" might thus be let out. Many sufferers have been blinded or maimed for life through such a practice. It is scarcely necessary to add anything further to emphasise the need for the spread of western medical science amongst the 400 millions of the Chinese Republic. A report of the Medical School and Hospital, along with any further information desired, may be obtained from Dr. R. Fletcher Moorshead, honorary secretary to the Joint Board, 19, Farnival-street, London, E.C. 4.

RECURRENT MALARIA.

STATEMENTS have been made that during the present war there has been an increase of cases of malaria, a greater degree of recrudescence of the infection, and a more tenacious resistance of it to quinine. Dr. Giuseppe Vaccaro, who has had exceptional opportunities of investigating the subject at the chief military hospital at Leghorn, contributes some interesting remarks on the question in a recent issue of *Il Morgagni* (Archives, No. 12, Dec. 31st, 1918). One explanation that has been put forward of the failure of quinine to prevent these recurrences is that the disease was produced by species of parasite prevalent in Albania and Macedonia which differ from those commonly met with in Europe. It was found, however, that in more than 500 of such cases examined by Dr. Vaccaro the parasite of the species *vivax* predominated, while the number of cases of malignant tertian and mixed infection seemed rather higher than in patients from the Lower Isonzo. Quinine given rationally and in sufficient doses in these cases acted in such a manner as to exclude not only all doubt as to its efficacy, but also the possibility of new and different parasitic forms being present. Dr. Vaccaro is of opinion that cases of malaria are more numerous because, for military reasons, many individuals stationed in malarial areas have been exposed to infection; that recurrences are more frequent and obstinate because the causes and conditions which have a provocative influence over the onset and recrudescence of the infection act together with more insistence and frequency, such as change of climate, exposure to cold, hardships, and wounds; that quinine has not given the results that were expected of it because the patients were not subjected, for easily understood reasons, to a reasonably sufficient and prolonged treatment, and, in addition, the infection has been extensively diffused owing to the large number of

gametiferous patients left at large. The fact, however, that many patients have violent relapses, even while under treatment by quinine, is an indication that the problem of recurrent malaria is an important one. The prevalent theory, that of Bignami, is that relapses are connected with the survival of asexual elements, which, either from their degree of development or because quinine resistant, take refuge in internal organs, where they remain living but inert, until from some provocative cause they develop and constitute a fresh febrile crisis. This theory, which might explain relapses which occur within a few days after the cessation of fever with incomplete or suspended quinine therapy, fails to account for those which manifest themselves a long time after the fever has ceased and after systematic quinine treatment, much less for those which occur at long intervals or before epidemics. The capacity of long survival in asexual parasitic elements, whose vitality is bound up with the precarious vitality of the red blood cells, at whose expense they live, seems to Dr. Vaccaro to be untenable and not consistent with the sudden and violent manner in which the clinical febrile symptoms show themselves. Even admitting the possibility of survival of asexual elements as an explanation of relapses after a short interval, the cessation of fever would depend upon the small number of these elements which survive the action of quinine or the defensive reaction of the organism, and are no longer capable of provoking a febrile reaction, and would not depend upon the interruption of reproductive development. This interpretation of returns of activity of malarial infection justifies the indication to persist in the administration of quinine with the object of suppressing completely the febrile generation for a long time after the febrile attacks themselves have ceased.

In the present state of our knowledge we do not know the final transformations which the sexual elements have to undergo in order to bring the parasite to develop a fresh generation, but it may be that the gametocytes can remain inactive in the hæmatopoietic viscera and under the influence of some internal or external cause develop and give rise to parasites of febrile generation. This theory, which attributes recurrences of malaria to the survival of sexual rather than asexual elements of the parasite, seems to Dr. Vaccaro to be the more probable. It is, in his opinion, highly improbable that any recrudescence of survived asexual elements could resist the action of quinine already in the system; and if quinine resisting, once launched into the circulation they would soon be extinct, whereas numerous parasitic elements can be found in the circulating blood on the first attack of a relapse. It seems, therefore, more reasonable to admit that the gametes arising from the development of the sexual elements are attacked by quinine less effectively than the young merozoites arising directly from the sporulation of the mature asexual elements, and hence the relapse takes place even while successive generations become quickly extinct and disappear under the influence of the specific drug.

THE Ministry of Health Bill was read for the first time on Monday last, Feb. 17th, and will be found, practically in full, in our Parliamentary Intelligence.

THE NEW LOCAL GOVERNMENT BOARD REGULATIONS FOR CONTROL AND TREATMENT OF CERTAIN EPIDEMIC DISEASES.

CIRCULAR P.H.2. 1919 deals with the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1918, issued by the Local Government Board to sanitary authorities. The regulations have been made with the object of securing better control over, and means for treatment of, certain epidemic diseases which are prevalent or threatened at the present time.

Notification of Acute Primary Pneumonia and Acute Influenzal Pneumonia.

Pneumonia, irrespective of the pneumonia complicating influenza, is one of the chief causes of death in this country, and the possibilities of bringing it under control have been frequently considered. Apart from the possibilities of diminishing its prevalence, the recent epidemic of influenza has shown the grave need for additional assistance in the care of cases of pneumonia. The present regulations are intended primarily to meet this need; but it is hoped that notification of cases of pneumonia will be followed by investigation of the conditions under which it occurs, and increased knowledge of its natural history. The regulations impose the duty of notification by a medical practitioner of each case of pneumonia occurring in his practice, when the disease is primary, or when it occurs as the result of an attack of influenza.

Malaria, Dysentery, and Trench Fever.

During 1917 and 1918 a few local outbreaks of bacillary dysentery and also of malaria due to infection contracted in the United Kingdom, have come under notice. Their study by the Board's expert officers, in association with the expert officers of the Army Medical Department, has shown that it is particularly important that public health authorities should become aware of the occurrence of any cases of malaria or dysentery at the earliest moment, so that prompt and effective action may be taken to ascertain whether in the circumstances there are any risks of the disease being spread and, where such risks arise, to apply the appropriate precautionary measures. The disease trench fever, which has caused serious epidemics in different war areas abroad, has not, so far as is known, hitherto spread in England and Wales. Trench fever, however, has been shown to be a disease the infection of which is carried by lice, and it is important that the occurrence of any case of trench fever in civil life should at once be made the occasion of special measures to limit the infection and to secure that persons in the patient's household, and those recently in contact with him, should be effectively freed from all parasites which can convey infection.

In view of these considerations and of the possibility that the opportunities of introduction of the infection of these diseases will be increased under the circumstances of demobilisation and the greater traffic with foreign countries which is now to be expected, the Board have in these regulations enlarged the duties and strengthened the powers of sanitary authorities and their medical officers of health in regard to each of these diseases, and are prepared to aid the work, whenever necessary, by advice or assistance from their own medical staff. The regulations require all cases of malaria, dysentery, and trench fever to be notified by medical practitioners unless to their knowledge they have been previously notified in the same district within six months.

Enteric, Typhus, and Relapsing Fevers.

Certain powers and duties imposed in the case of dysentery, particularly those to prevent infection being conveyed by the handling of food by "carriers," are made applicable also to enteric (typhoid and paratyphoid) fever. Similarly the powers and duties in relation to trench fever are extended to two other diseases the infection of which is conveyed by lice—viz., typhus and relapsing fever.

Special Information in Certain Cases.

The regulations require the medical officer of health immediately to send to the Board the name and address of any case which comes to his notice of typhus, relapsing fever or trench fever, or of any case of malaria in which he has reason to believe that the infection has been contracted in the United Kingdom. He is also required to give the Board immediate information of any outbreak of dysentery in his district. Similar information, except in the case of county boroughs, should be sent to the medical officer of health of the administrative county. These provisions have been made in order that the Board may be in a position at once to make any necessary inquiries or give any necessary

warnings outside the district from which the case is reported, and also to enable expert investigation to be made by the Board's medical inspectors or pathologists should the case so require.

Provision of Medical Assistance.

The local authority is empowered to provide medical assistance, which includes nursing, for patients who are in need of such assistance, and are suffering from pneumonia, or any of the other diseases mentioned in the regulations.

General.

The regulations will take effect on March 1st next, and notice of the provisions as to notification should be given forthwith to all medical practitioners resident in or practising in the district.

Copies of the Order and of this Circular may be obtained, either directly or through any bookseller, from H.M. Stationery Office at the following addresses: Imperial House, Kingsway, London, W.C. 2; 28, Abingdon-street, London, S.W. 1; 37, Peter-street, Manchester; and 1, St. Andrew's-crescent, Cardiff.

TUBERCULOSIS.

The Tuberculous Ex-service Man.

THE very urgent nature of the problem presented by the 50,000 invalided men already discharged from the Services suffering from tuberculous disease formed the text of a strong appeal for the appointment of a Select Committee made by Dr. Nathan Raw in a maiden speech delivered in the House of Commons on Feb. 14th (see Parliamentary Intelligence in other column). The problem, especially the effect of the discharge of these men upon the civilian population, will form the basis of an address to be delivered at the Central Hall, Westminster, on Thursday, Feb. 27th, by Mr. P. C. Varrier-Jones, principal of the Papworth Tuberculosis Colony, entitled "The Consumptive Soldier and Civilian." Mr. P. Rookliff, chairman of the London Insurance Committee, will preside, and a discussion on after-care and the economic problems involved will follow, in which Professor Sims Woodhead, Dr. Noel D. Bardswell, and Sir StClair Thomson, among others, are expected to take part.

Suggested Scheme for a Tuberculosis Service.

A representative conference of tuberculosis officers met at the Royal Society of Medicine on Feb. 15th, by arrangement of the Tuberculosis Society, to consider a scheme for the formation of a complete tuberculosis service under the control of a separate department to be established in the coming Ministry of Health. A scheme, previously printed and circulated, was presented as a basis for discussion, and after considerable modification was unanimously approved in the following form:—

1. That a special department of the Ministry of Health in each country be created for the prevention and treatment of tuberculosis. The personnel of these departments should include three Commissioners of Tuberculosis in England, one in Wales, two in Scotland, and two in Ireland. These Commissioners should be appointed by the Crown. They should have special knowledge and experience of tuberculosis. A Medical Commissionership, being the highest appointment in the Tuberculosis Service hereinafter mentioned, should be filled by promotion from the ranks of that service. The Commissioners of Tuberculosis should advise a committee, representing medicine, the Public Health Service, local authorities, Ministry of Pensions, trade unions, Friendly Societies, and other organisations interested in social welfare, in each of the respective countries. The Department of Tuberculosis thus constituted in each Ministry of Health would undertake the following duties:—(a) To be responsible for general administrative measures against tuberculosis throughout the countries concerned. (b) To be responsible for statistics relating to the disease, and to furnish an annual report as to the results of all forms of treatment. (c) To suggest, advise, direct, and if necessary finance schemes of after-care and employment of tuberculous patients. (d) To direct, to supervise, and to finance an educational programme by means of lectures, travelling exhibitions, appropriate cinema films, and by any other means. (e) To direct and to finance research work in relation to the disease. (f) To study housing and conditions of work in relation to the incidence of tuberculosis, and to promote legislation dealing with this matter.

2. That Deputy Commissioners of Tuberculosis be appointed by the Crown. These Deputy Commissioners would work under the direction of the Commissioners, and should be appointed from the ranks of medical practitioners in the Tuberculosis Service. Deputy Commissioners of Tuberculosis would undertake the following duties: (a) To be responsible for an administrative area and to report direct to the Commissioners as to whether the recommendations made by the Department of Tuberculosis are being carried out locally. (b) To report to the Commissioners on the care of tuberculous patients throughout the country, these reports being based on the results of direct inspection. (c) To ascertain whether adequate provision has been made in every administrative area for all tuberculous patients. (d) To visit every class of institution, to report on the efficiency of treatment, and to ascertain whether suitable cases are being dealt with

by appropriate institutions. (e) To confer with the tuberculosis officer, the medical officer of health, and the local sanitary authority in each area on all matters pertaining to tuberculosis.

3. That tuberculosis officers be appointed throughout the kingdom. Prior to any such appointment the selected candidate should be approved by the Commissioners of Tuberculosis. No medical practitioner should be appointed as tuberculosis officer without having had (a) experience in general practice, and (b) experience as resident physician or surgeon in a general hospital, followed by one year's special experience in an institution for the treatment of tuberculosis. Tuberculosis officers would undertake the following duties: (a) To act as administrative and clinical officer as regards tuberculosis in each area. (b) To be the direct adviser of the local authority as regards the prevention and treatment of tuberculosis in that area. (c) To furnish such reports as may be required by the Commissioners of Tuberculosis and by the local authority. (d) To report to the medical officer of health as regards any insanitary conditions affecting the incidence of tuberculosis. (e) To supervise the after-care and employment of tuberculous patients in his district. (f) To select patients for treatment in institutions and in their own homes. (g) To act as consultant in conjunction with practitioners who may desire his services.

4. That to assist the tuberculosis officer in these duties an adequate number of assistant tuberculosis officers, of nurses, and of trained health visitors be appointed by the local authority.

5. That in respect of the foregoing services adequate salaries should be paid.

6. That reasonable security of tenure be assured to these officers by the Department of Tuberculosis.

7. That central arrangements be made for the superannuation of all the foregoing officers on a contributory basis.

It was resolved to bring the scheme before the Prime Minister and Dr. Addison at an early date by a deputation composed of tuberculosis officers representative of all groups and districts.

Government Contributions to Residential Treatment of Tuberculosis.

The Local Government Board, in a circular dated Dec. 28th, 1918, has drawn attention to the new financial arrangements for the provision of residential treatment for discharged tuberculous soldiers. These arrangements came into operation on Jan. 1st last, and they provide, among other things, for the whole cost of treatment being defrayed by the Exchequer, so far as it is not met out of insurance funds.

Hull After-care Colony.

The first annual report of the Hull After-care Colony for 1918 gives an account of an undertaking run largely on the lines of the Springfield Colony at Edinburgh. It was decided that, with a view to limiting the liability of individual members engaged in this undertaking, a company should be established (not for profit) without the word "Limited" in its title. The sanction of the Board of Trade was obtained for this plan and a licence secured to hold 100 acres of land. As a result of negotiations the Hull Corporation, Insurance Committees, and Local War Pensions Committees agreed to contribute a weekly maintenance rate in respect of each colonist. Only arrested or non-infectious cases of tuberculosis are eligible for admission, and the rule that anyone who develops active symptoms must be discharged has already been enforced in two cases. The present accommodation is for 17 men and 8 women. Hitherto local applicants fulfilling the necessary qualifications for admission have been so few that accommodation has been found also for applicants from distant parts of the country. Each colonist is trained in rearing poultry, pigs, and cattle, and in intensive horticulture. The colony is under the supervision of the tuberculosis officer for the East Riding County Council.

Bournemouth After-care Colony.

The annual report of the Tuberculosis Aid and After-care Association for the County Borough of Bournemouth outlines a scheme for establishing a small-holding at Kinson, Dorset, in conjunction with the farm colony already established there. It is suggested that the small-holding should not be managed with a view to immediate profit or even self support, but that it should be a training centre for tuberculous patients. Arrangements are being made for the Y.M.C.A. to provide sleeping and living accommodation in the existing administrative block of buildings. It will also be responsible for the maintenance and training of the patients at an inclusive cost of 35s. per head.

Welsh National Memorial Association.

Dr. H. E. Watson, medical superintendent of the North Wales Sanatorium, Denbigh, in the February number of *The Welsh Outlook*, has reviewed the development of the Association's scheme since 1912. In the latter part of that year it controlled only about 31 sanatorium beds. Early in 1919 its two sanatoriums in North and South Wales alone

could accommodate almost 600 patients. Of the 515 patients treated in sanatoriums under the Association in 1913, 255, or 49.5 per cent., were found to be well and at work on March 31st, 1918. Of the 790 patients treated in 1914, 52.1 per cent. were well and at work in 1918.

Compulsory Notification of Tuberculosis in France.

In a recent interview M. Louis Mourier, Under Secretary of State, has outlined his scheme for making tuberculosis a notifiable disease. This scheme is to go hand-in-hand with the development of sanatorium treatment on State lines. He recognises that State control is essential and that notification is inevitable. It would appear that he anticipates a certain amount of opposition from the medical profession.¹

Decline of Tuberculosis in Trinidad.

The thirteenth annual report of the Trinidad Association for the Prevention and Treatment of Tuberculosis is a striking testimony to the efficiency of the crusade against tuberculosis in this colony. At the time the association was founded (1905) the death-rate from tuberculosis showed a decided upward tendency, being 216 per 100,000 in 1902-3 and 258 in 1905-6. In 1917 this death-rate had fallen to 126. A comparison with the death-rate 13 years ago in Trinidad and Tobago shows that it has fallen 49.4 per cent. As the medical officer of the Association, Dr. G. S. Masson, points out, Trinidad has thus reduced its death-rate from tuberculosis by 49.4 per cent. in nearly half the time that it took England to reduce her tuberculosis death-rate by 30.9 per cent. It is suggested that the results achieved in Trinidad may eventually lead to a revision of the assumption that native races are especially susceptible to tuberculosis, for in the past it would appear that the "susceptibility" of the natives in Trinidad has largely been due to mass infection in association with overcrowding and other insanitary conditions.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Indian Systems of Medicine.

AN interesting summary of the views of local governments and administrations on the questions of placing indigenous systems of medicine on a scientific basis was before the last session of the Imperial Legislative Council. The unanimous opinion was expressed that the proposition was an impossible one. The systems in question, it affirmed, were a survival of a state of medical knowledge which once prevailed in Europe, but had been superseded by a series of scientific discoveries extending over several centuries. "They ignore," it was said, "the instruments of scientific investigation which have made modern medicine and surgery possible, and the theories on which they are based are demonstrably unsound. Even at the present time there are numerous practitioners who have superimposed a knowledge of Western medicine on Ayurvedic instruction or *vice versa*, but there is evidence that these men do not possess the confidence of the people to the same degree as practitioners who have been trained solely in accordance with the strict tenets of the Ayurvedic, and the latter are strongly opposed to any form of Government interference. If advance is to be made on these lines it is essential that there should be a strong movement among indigenous practitioners supported by public opinion to reform and organise themselves, and of such a movement there is at present little or no evidence." The summary went on to say that the hold which ancient systems undoubtedly have on the masses is attributable in part to a form of credulity analogous to the belief in the magical efficacy of quack drugs and patent medicines which is still found in Western countries, but the popularity of these systems is chiefly due to the smallness of the fees which their practitioners are willing to accept. The attendance at Government hospitals and dispensaries where the treatment is gratuitous proves that the value of such treatment is appreciated, and in the opinion of local governments it would be a grave misuse of public revenues to divert the funds available for this purpose to the encouragement of systems which they consider to be unsound. There is, however, the statement proceeds, one

line of research which is likely to be fruitful, and that is the scientific investigation of the properties of indigenous drugs. Several local governments have already considered measures for conducting such investigations, but these measures have had to be postponed owing to the impossibility of obtaining during the war the services of competent pharmacologists.

Medical Research in India.

A small informal committee of medical men met recently at Delhi in order to consider the future of medical research in India, the composition of the staff which will be requisite and the terms of their employment, and the relation of the Research Department to the public health organisation.

Sick Pay for Indian Nursing Sisters.

It has been decided, with the approval of the Secretary of State for India, that lady nurses of the Queen Alexandra Military Nursing Service for India invalided on account of wounds or sickness due to field service will receive during sick leave full pay for the first three months and thereafter three-quarters pay for six months and two-thirds pay for such additional sick leave as may be granted up to a total period of two years. Under this decision, which will have effect from Feb. 17th, 1917, sick leave cannot be combined with privilege leave.

New Honorary Surgeon to the Viceroy.

Lieutenant-Colonel J. B. Smith has been appointed honorary surgeon to the Viceroy, vice Colonel H. F. Cleveland. His pupils in every quarter of the globe will be glad of this appreciation of his distinguished services to ophthalmic surgery.

Allegations of Cannibalism in Sind.

A great deal of interest has been roused in Sind by the trial of two men at Karachi for alleged cannibalism. This is the first case of the kind for many years.

Simla and Delhi Health Officers.

Captain E. S. Phipson, I.M.S., has been appointed health officer of Simla, vice Major J. M. Holmes, I.M.S., who has returned to Delhi as health officer.

Major Cook, I.M.S., has been posted to the United Provinces, appointed civil surgeon of Moradabad.

Jan. 26th.

URBAN VITAL STATISTICS.

(Week ended Feb. 15th, 1919.)

English and Welsh Towns.—In the 98 English and Welsh towns, with an aggregate civil population estimated at 18,500,000 persons, the annual rate of mortality, which had increased from 15.0 to 21.0 per 1000 in the three preceding weeks, further rose to 27.8 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 27.2, or 7.0 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 8.1 in Coventry, 12.8 in Eastbourne, and 13.9 in Tottenham, to 43.6 in South Shields, 43.9 in Huddersfield, 51.6 in Wolverhampton, 61.0 in Newcastle-on-Tyne, and 62.5 in Tynemouth. The principal epidemic diseases caused 172 deaths, which corresponded to an annual rate of 0.5 per 1000, and included 48 from infantile diarrhoea, 44 from diphtheria, 27 from measles, 25 from scarlet fever, 23 from whooping-cough, and 5 from enteric fever. The deaths from influenza, which had been 222, 272, and 604 in the three preceding weeks, further rose to 1363, and included 273 in London, 148 in Liverpool, 119 in Newcastle-on-Tyne, 50 in Bradford, 44 in Manchester, and 32 in South Shields. There were 2 cases of small-pox, 1094 of scarlet fever, and 1179 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5, 1080, and 1166 respectively at the end of the previous week. The causes of 80 deaths in the 98 towns were uncertified, of which 15 were registered in Birmingham, 14 in Liverpool, 6 in London, and 4 in Sunderland.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17.0 to 23.8 per 1000 in the four preceding weeks, further rose to 32.0 per 1000. The deaths from influenza numbered 76, while in 298 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 31 and 164 respectively. The 677 deaths in Glasgow corresponded to an annual rate of 31.6 per 1000, and included 23 from whooping-cough, 9 from diphtheria, 5 from infantile diarrhoea, and 2 from measles. The 333 deaths in Edinburgh were equal to a rate of 51.6 per 1000, and included 10 from whooping-cough, 4 from diphtheria, and 1 each from measles and scarlet fever.

Irish Towns.—The 259 deaths in Dublin corresponded to an annual rate of 33.3, or 8.3 per 1000 above that recorded in the previous week, and included 6 from infantile diarrhoea, 2 from whooping-cough, 1 each from measles and scarlet fever, and 21 from influenza. The 175 deaths in Belfast were equal to a rate of 22.8 per 1000, and included 2 from diphtheria and 1 from infantile diarrhoea.

DONATIONS AND BEQUESTS.—The late Captain Edward Geoffrey Watson Smyth, of the Coldstream Guards, has bequeathed £2000 to St. Dunstan's Hostel for the Blind.

¹ THE LANCET, 1919, I., 233, 223.

Correspondence.

"Audi alteram partem."

BIOLOGY AND THE MEDICAL CURRICULUM.

To the Editor of THE LANCET.

SIR,—I should like to support strongly Mr. T. G. Hill's plea for the more efficient instruction of the medical student in biology. That medicine is a biological subject is one of those truths so plain that we are all apt to forget it. The botany and animal morphology which have become conventional since Huxley and Martin are pretty good, but Mr. Hill's idea of merging them into a sound biology is very much better. In recent years there has been a progressive degradation of the relative position of biology in the medical curriculum in London, and by a curious coincidence the importance of the general ideas of biology to medicine has become increasingly obvious. The central point of pathology is adaptation, and on the whole I should say that no idea seems to be more novel to the average medical student in his third or fourth year. Yet it is pretty nearly the central point of biology as well, though I daresay I have some pathological prejudice as to this.

But let the student be taught biology, and not just the odds and ends which his teacher imagines will be useful to him as a medical man. There is nothing really very scandalous in the pathologist who did not recognise a spiral vessel so long as he knew who to worry for the solution of his difficulties. Knowing where to look for a thing is very nearly as good as knowing it off-hand. The principle of the relations of plants to one another and to their environment is the sort of general notion which will be of permanent and insistent value in the business at which the student is to spend his life. And if a more effective teaching of biology is necessary, it is equally impossible to cram anything more into the curriculum. If biology is to have more room it must be at the expense of some other subject. Chemistry is the most obvious victim; it is not a particularly educative subject, and as the key which we have been so often told is to undo all our troubles it has seemed to work rather stiffly. A good many people seem nowadays to be thinking that biological problems are best tackled by biological methods.

I am, Sir, yours faithfully,

Radlett, Feb. 17th, 1919.

A. E. BOYCOTT.

MEDICINE, PARLIAMENT, AND PUBLIC.

To the Editor of THE LANCET.

SIR,—In view of Sir Henry Morris's plea in your issue of Feb. 1st, of the turbulent meeting in Wigmore Hall on Feb. 9th, and of Dr. Addison's meeting in which he expounded some of his proposals for the Ministry of Health, may an old advocate of such a Ministry and a political candidate of 13 years' standing make a few suggestions?

The demands and rights of the profession cannot be authoritatively expressed by any body which will be qualified to contribute the special knowledge and experience of the profession to the conduct of the public services. The latter requires a specially selected body, such as the Medical Parliamentary Committee, or else the medical corporations and institutions themselves, to give expert advice. It will be the duty of the Minister of Health, with the help of his advisory councils, to attach relative weight to such advice, according to its internal or external evidence of importance. No democratically elected "Medical Parliament" could take over this function, nor would such a body be free from the necessity, where medical rights were at stake, of unconsciously subordinating its other recommendations to the defence of such rights. A medical trade union may or may not be necessary for such defence, but its advice to the State would be suspect. We must contribute advice that is not suspect. The two objects must be treated separately, and it is my own opinion that the existing corporations and institutions are able to give the advice required for the second and more general object. The Medical Parliamentary Committee may help as a clearing-house, but its authority will be indirect, voluntary, partial, and the work of such a body rests on a few men who have many claims on their time and energies.

The main requirement is to watch closely the statutory machinery to be set up in connexion with the proposed Ministry, to help it, scientifically to criticise it, and to bring weight to bear in Parliament to secure efficiency and prevent mistakes. For this purpose efficient Parliamentary representatives, medical or lay, are essential; and if the Medical Parliamentary Committee succeeds in putting effective representatives into Parliament and on to local authorities it will provide the only effective influence on behalf of medical science in public business.

It is too often overlooked that a Member of Parliament must primarily represent a constituency and not any profession, science, or other particular interest. He represents his constituents in all the proceedings, great or small, in which they or any of them may be concerned within the ambit of Parliament or of any Government department. And throughout he holds a brief for the particular policy or attitude of the political association that supported his candidature. It is only subject to these considerations that he can make use of his medical experience—and he will not find it of much help towards his election.

It is for lack of these considerations that the medical profession, as compared especially with the legal, is so weakly represented in Parliament. Quite apart from party, politics is a subject of great complexity, and requires no smattering, but a sound knowledge and a strenuous, practical experience. Without this equipment few candidates will be elected and none will exercise any considerable power in the counsels of Parliament. There, as in private practice, the most convincing facts, the soundest advice, are useless unless conveyed to the proper person, at the proper time, in the proper way, and in the proper place; and then they must be driven home with the aid of every direct or adventitious force that can be summoned to their aid. If a few of our best men, at the outset of their qualified career, instead of devoting their spare time to coaching and other by-play, will devote all their energies to this subject, as do many young lawyers, the medical profession may then confidently expect to play some part in the Government of the nation comparable with that which, despite all criticism, has on the whole so worthily been played by the legal profession and other sections of the community.

I am, Sir, yours faithfully,

F. E. FREMANTLE,

Lieutenant-Colonel, R.A.M.C., T.F.

Queensberry-place, S.W., Feb. 19th, 1919.

STATE MEDICAL SERVICE:

A COMPARISON WITH THE MILITARY PATTERN.

To the Editor of THE LANCET.

SIR,—A good deal has been written for and against a State Medical Service. The subject continues to be discussed from diverse points of view, and in support of the argument for such a service and of the lines on which it should be framed the Army Medical Service has been much quoted. Again, the proposed civil service has been discussed in a manner which makes it evident that some regard its adoption as necessarily involving the disappearance of the general practitioner, and that the survival or suppression of general practice is the crux of the whole business. The medical service of the Army does not make provision for some needs that amongst the civil population a medical service must provide for, and though in general the military could serve as a model for the civil service, they must necessarily differ in some detail. While the Army Medical Service: organised with a view to removal of the sick and injured to central hospitals, and treatment "in quarters" by visiting medical officers is made the exception, among the civil population the reverse holds good, the majority of sick persons being treated in their homes ("in quarters") and but comparatively few in hospital. It is not feasible, with advantage, to alter the position materially in either case. The medical officer to a regimental unit (e.g., a battalion of infantry) may be taken as the equivalent of the general practitioner of civil practice, but he does not retain under his care any but those who are suffering from quite trivial ailments which do not unfit them for some form of duty. In times of peace regimental units do not ordinarily have a medical officer attached to them. A system is adopted for dealing with the sick or injured soldier which resolves itself

into treatment being given in hospitals and at medical inspection rooms, located conveniently in garrisons, according to the nature of the disability.

It will at once be obvious that this method of dealing with the sick is the reverse of what obtains in civil life: the patient comes or is brought to the doctor instead of *vice versa*. It also results that the military medical officer has at hand means ready for the diagnosis and treatment of such injuries and diseases as he finds are beyond his resources. Since inter-communication is established between hospitals and officers in immediate medical charge of troops, and as these officers have access to wards and laboratories, if not actual duties to perform in hospital, it follows that every opportunity is afforded them of watching or practising methods of diagnosis and treatment which the conditions of their service debar them, for the time being at least, from actually carrying out themselves. Obviously this arrangement is highly beneficial to both "doctor and patient," since the former has no difficulty when need arises for expert assistance in diagnosis and treatment in obtaining it, and for keeping well abreast of all advances in both matters, while the patient need suffer no delay in obtaining "further advice" or special forms of treatment when such are required.

Turning to the conditions of civil practice, there is no organisation affording equally and to all the assistance they may require beyond what can be given by the general practitioner. The Public Health Service has means for dealing with certain diseases in a limited way, charitable institutions and the Poor-law provide for the least well-to-do, but a large percentage of the population is unassisted by these means, and as more costly methods are naturally not very readily sought after the public health suffers accordingly. The pressing need is to assist the general practitioner in obtaining diagnosis and treatment of those cases beyond his resources in a way that will neither injure his reputation nor excuse him from availing himself of them.

If this principle is accepted and developments are shaped along these lines there will be no suppression of general practice, it would rather be reinforced, supervised, and made more effective. In a tentative sort of way the Public Health Service does this by treating certain diseases, and affording means of diagnosis for all (e.g., tuberculosis), and it does not require great imaginative power to see how these small beginnings could be developed to cover a much wider field so as to render assistance both to doctor and patient which it is difficult for any but the very poor or rich to obtain. A service of the kind indicated would be costly if it is to include the whole field of medicine, surgery, and midwifery, for to run it on decent and efficient lines would entail the provision of buildings, equipment, and personnel of unquestionable quality. But it should cause at its inception less disturbance to existing conditions than any scheme involving the abolition at the outset of the general practitioner.

Feb. 14th, 1919.

I am, Sir, yours faithfully,
J. H. P. GRAHAM.

THE QUALITY OF COMMERCIAL VACCINE LYMPH.

To the Editor of THE LANCET.

SIR,—I am anxious to draw attention to the present condition of some of the vaccine lymphs as sold to general practitioners. Being attached to the Infant Department of one of the leading hospitals, part of my duty is to vaccinate infants there with lymph obtained from the Government laboratories. At the same time I am vaccinating children in my ordinary practice with lymph supplied commercially; for the Government lymph is not for sale and quite unprocureable for use in private practice.

For six months past I have been suspicious as to the efficacy of the lymph sold to us and I am now able to prove the comparative worthlessness of some of these lymphs. At the hospital, where I use Government lymph, failure to obtain a perfect vesicle at the site of every inoculation is rare. It is rarer to get all places to "take" when using a commercial lymph in private practice. Far more commonly one or perhaps two places take in a feeble and unsatisfactory manner. Sometimes no inoculation takes and this even after vaccination has been repeated. Recently, for instance, I vaccinated an infant in private practice with lymph with a good name from a well-known chemist. I

inoculated in three places—none took. After an interval I inoculated again in three places with fresh vaccine—none took. I succeeded in getting a tube of Government lymph and, using this, obtained three perfect vesicles.

Now the public are not fond of having their infants revaccinated due to failure of lymph, and when after a second time a feeble result occurs in one place only, the practitioner certifies the child as "successfully vaccinated," warning the parents that the infant is only partially protected and should be revaccinated in a year, or he may even fail to do this, when the child remains a standing danger to the community. There is one lymph for the rich and one for the poor, and in this case I plead for the rich.

The importance of this matter can hardly be exaggerated, and if we must use a commercial lymph I would urge for an adequate control by Government of such lymph. But I would go further and press for the suppression of all commercial lymph establishments and the distribution for use of lymph adequate in power and free of cost by the Government. The risk of life and the danger to others of these partially protected, and soon unprotected, children is becoming ever greater, and I trust that one of the first duties of a Health Minister will be to deal adequately with the question.

I am, Sir, yours faithfully,

Kensington, Feb. 3rd, 1919.

E. A. BARTON.

THE PRESENCE OF A FILTER-PASSING VIRUS IN INFLUENZA, ETC.

To the Editor of THE LANCET.

SIR,—Dr. Robert Donaldson's several recent letters have raised many interesting questions which, it is to be hoped, will not escape attention. When discussing last year in your columns (May 18th, 1918) those cases then thought to be examples of botulism, and now referred to, in the Viennese style, as encephalitis lethargica, I made some reference to Rosenow's pleomorphic coccus, which had till then almost escaped allusion in this country. The possible identity of this organism with that found by von Wiesner in the Viennese cases was discussed by me with my friend, Dr. L. Rajchman, the author of the Memoir on Influenza, so justly eulogised in your issue of Jan. 4th (p. 25). Shortly afterwards, in the first case of "encephalitis lethargica" that he had the opportunity of investigating, he found, as a denizen of the naso-pharynx, a remarkable organism which, so far as could be determined, was identical, on the one hand, with that found by Rosenow in poliomyelitis, and, on the other, with that found by von Wiesner in "encephalitis lethargica." He found the same organism in other cases of an "influenzal" nature, which at the time we regarded as possibly "abortive" cases of the nervous disease. Further, by strict and peculiar methods of anaerobic cultivation Dr. Rajchman (whose critical acumen and bacteriological skill no one can doubt) produced from his pure cultures of "Rosenow" a free growth of minute bodies which to us appeared not distinguishable from Flexner's "globoid bodies," and which now may be said to resemble those described by the investigators at Etaples.

A little later, when engaged in writing the memoir alluded to, Dr. Rajchman came to the conclusion that phases of Rosenow's coccus, or at any rate of a closely allied organism, had been described by many observers in different countries in relation to the vernal epidemic of influenza. Dr. Rajchman was fully alive to the possibility of relation between the filter-passers and the non-filter-passers, and pointed out to me the interesting bearing of these newer bacteriological developments on the epidemiological conclusions that, following Dr. Hamer's line of thought, I had formulated and was about to express in the Chadwick Lectures. Dr. Rajchman left England some months ago; his work was unfinished, and his cultures, I fear, have died out.

Dr. Donaldson knows, I am sure, that these lines are written, not to detract for one moment from the originality and value of his own work, but, on the contrary, to show in what measure his ideas and results are supported by those of others. Truly, there is no *a priori* reason to assume that filter-passing organisms have no other stage or form of existence. The work of Rosenow and others goes some way to prove that the contrary assumption is sometimes true, and that pleomorphism sometimes occurs to a quite unorthodox extent. We allow even a tapeworm the luxury of "alternate

generations"; surely the allegation of pleomorphism, even when carried to extravagance, in the eyes of the old school, need not wholly discredit a coccus, before, at least, the allegation is disproved. Impartial investigation is called for, and it is such investigation that Dr. Donaldson fairly claims for organism "D."

Exclusive reliance on positivist forms of thought and analytical methods of examination will not carry us much further; it is time that more play be given to the synthetic and imaginative faculties, without which, as Darwin said, there is no useful observation.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 15th, 1919.

F. G. CROOKSHANK.

THE TREATMENT OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—With respect to the article with this title which appeared in your issue of Feb. 8th under the names of Sir Archdall Reid and myself I desire to make it clear that the prevalence of gonorrhoea amongst those who used nargol jelly as a preventive applied to the period prior to April 1st, 1918. Shortly after this date the issue of nargol jelly was discontinued in the Royal Navy, calomel cream remaining the sole official prophylactic against both syphilis and gonorrhoea.—I am, Sir, yours faithfully,

P. HAMILTON BOYDEN,

Portsmouth, Feb. 17th, 1919.

Surgeon Commander, R.N.

INFLUENZA AND CHRONIC LUNG DISEASE.

To the Editor of THE LANCET.

SIR,—Captain D. M. MacRae's letter of Dec. 13th, 1918, which appears in your issue of Feb. 15th, raises a point of great interest. While a greater number of acute cases of recent origin are coming to notice, suggesting that an attack of influenza with complications kindles a latent tuberculous lesion into activity, still, in my experience also, subjects of "open" phthisis have come through the recent epidemics remarkably well. Thus out of an average of 520 "open" cases on the Newcastle-upon-Tyne Dispensary register, only 2 are known to have died from the immediate effects of influenza during the year 1918. So noticeable has this been, and at the same time so unexpected, that I have been led to conjecture that the "mixed infection" of "open" phthisis has resulted in considerable immunity against the streptococci and pneumococci which are responsible for the serious complications which have proved so fatal. It would be interesting to know the experiences of those having large numbers of phthisical individuals under supervision in other areas.

I am, Sir, yours faithfully,

W. H. DICKINSON,

Tuberculosis Medical Officer, Newcastle-upon-Tyne.

Feb. 18th, 1919.

"MASS MEETINGS" AND THEIR REPRESENTATIVE CHARACTER.

To the Editor of THE LANCET.

SIR,—In what sense are so-called "mass meetings of the medical profession" really representative of the medical profession? True, we all have the opportunity of reading a general invitation to "The Wigmore Hall" or "No. 1, Wimpole-street." Whatever our views, whatever our inclinations, the majority of us do not get the opportunity of attending. London is a far journey for a host of us. Many cannot in these days afford a week-end in London. Large numbers cannot leave their appointments and practices.

The result is that a few hundred medical men meet together and apparently arrogate to themselves the right to speak for the multitudes that cannot attend. There is a tendency for well-meaning coteries to run such meetings. This is true of most medical societies. Surely there are better means of ascertaining the views of the whole profession and I trust that such means will be adopted in future and save us from mob oratory and mob law and so conduce to medical unity.

I am, Sir, yours faithfully,

Bramcote Sanatorium, Feb. 11th, 1919. PETER W. EDWARDS.

Obituary.

ANDREW MELVILLE PATERSON, M.D. EDIN.,
F.R.C.S. ENG.,

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF LIVERPOOL AND
FORMERLY PRESIDENT OF THE ANATOMICAL SOCIETY
OF GREAT BRITAIN.

WE regret to announce the death of Professor Andrew Melville Paterson, professor of anatomy in the University of Liverpool and assistant inspector of military orthopaedics, which occurred at his Liverpool home on Feb. 13th, at the age of 56.

Professor Paterson was the son of the late Rev. J. C. Paterson, a well-known Presbyterian minister in Manchester, and was educated in the Grammar School of that city and later at Owens College. He proceeded to the University of Edinburgh and graduated in 1883 with first-class honours as M.B. and C.M., taking three years later the M.D. degree as a gold medalist with a graduation thesis on the "Spinal Nervous System of the Mammalia." He early declared the special bent which his pursuits would take, and was appointed in rapid succession demonstrator of anatomy in the University of Edinburgh, then to the same post in Owens College, to be elected in 1888 first professor of anatomy in University College, Dundee. Here he gained repute alike as teacher and writer, his numerous articles on anatomical subjects showing how much he was in the van of his science, while his "Anatomists' Notebook," his articles in Cunningham's "Text-book of Anatomy," and his "Manual of Embryology" displayed him as an all round master. After nearly seven years' work at Dundee he was appointed professor of anatomy in the newly constituted University of Liverpool, and in the following year, 1895, was appointed Dean of the Medical Faculty of the University, a post which he held for nine years, to the great benefit of his adopted *alma mater*. As might have been expected his services were widely requisitioned as an examiner, and at different times he examined in anatomy at the University of Oxford, Cambridge, Durham, and London, at the English Conjoint Board, and at the qualifying examination for the Indian Medical Service. In 1903 he was one of the Hunterian professors of the Royal College of Surgeons of England, when he took as his subject for his lectures the morphology of the sternum. These lectures were later published in book form.

We have received from Professor William Wright, Dean of the London Hospital Medical College an estimate of Professor Paterson's work and character, written, as he says, by "one who had the privilege and pleasure of intimate friendship." In its fullness and discrimination it leaves little to be added. Professor William Wright says:—

"The outstanding feature to my mind of Paterson's personality was his tireless energy, an energy altogether too kinetic for the somewhat frail body which it animated. He was seldom, if ever, at rest. He thought rapidly, he formed his judgments rapidly, he wrote rapidly whether in rhyme or prose, he sketched rapidly and moved rapidly. These characteristics had their advantages and their disadvantages. He was pre-eminently one who accomplished things, and he has left in the anatomical department of the University of Liverpool a department which is, in my opinion, second to none in equipment, arrangement, and endowment. On the other hand, his haste sometimes made him appear intolerant, but those who were granted the favour of knowing him more intimately appreciated the fact that there was never anything personal in his criticisms or strictures; it was merely that he was consumed with a desire to get things done. No one I have ever known was less willing to compromise, no one was ever less under the sway of what many of us believe to be the really sound Greek maxim—*μὴδὲν ἀγὰρ*.

As an anatomist he was most regular in his attendances at the meetings of the Anatomical Society and one of the most frequent contributors to its proceedings. He did not, perhaps, quite fulfil the brilliant promise of his early days, a fact which he was not slow to acknowledge, and which he regretfully explained as due to his having allowed himself to become engrossed in administrative duties and in academic and polemical discussions. Still he has a large number of original, thoughtful, and highly important papers on anatomy to his credit, his contributions to our knowledge of the sternum, the sacrum, and the limb-plexuses being of special value. As an anatomist he formed, too, an interesting link with the past, having served as a demon-

strator to the late Professor Morrison Watson, of Manchester, the earliest occupant, I believe, in the provinces of a chair of human anatomy."

Of Professor Paterson's work in Liverpool, outside the University, it is difficult to speak too highly. At the outbreak of war he was called to the assistance of the War Office; he held a temporary commission in the R.A.M.C. and worked at the orthopaedic centre at Alder Hay. His military duties as Assistant Inspector of Military Orthopaedics under Sir Robert Jones soon became of first-class importance, and were discharged with his wonted thoroughness. He was promoted to a lieutenant-colonelcy and was largely responsible for the organisation of the special orthopaedic centres. Indeed, there can be no doubt that the whole-hearted way in which he threw himself into the additional labours entailed upon him by the war, while discharging to a considerable extent the duties of the chair of anatomy in Liverpool, wore out a frame never very robust. Moreover, like too many members of the medical profession, the war exacted from him the most grievous sacrifice of all, for his son was lost in the battle of Jutland.

Professor Paterson's death will be felt by a large circle of sincere friends owing to the generosity which he showed in any cause where his sympathy and interest had been enlisted. He was a man who inspired warm affection which will be lasting.

PROFESSOR BLANCHARD.

Dr. Raphael Blanchard, who succumbed very rapidly to a sudden heart attack on Feb. 8th, was 61 years of age. He had occupied for long the chair of parasitology at the Faculty of Medicine in Paris, and his great reputation in



France and abroad was due to his works on medical zoology, and particularly to his researches on the animal carriers of pathogenic germs and their rôle in the propagation of epidemics. The "Traité de Zoologie Médicale," in two volumes, first appeared in 1886-90. At the time of his death he was engaged on the great task of a history of medicine and had made some progress in

the publication of a *corpus inscriptionum* devoted to medicine and biology. His diligence was incredible. He was secretary to the Academy of Medicine, he founded the French Society for the History of Medicine, the Colonial Institute of Medicine, and the French Congress of Zoology. For 20 years he acted as general secretary to the Zoological Society of France. Owing to the part which he took at several of the International Congresses of Medicine he became a well-known figure abroad.

DEATH OF HENRY JOHN STRONG, M.D., M.R.C.S.—Dr. H. J. Strong, who died at his house at Worthing on Jan. 29th last, had reached the ripe age of 86. He entered at St. George's Hospital in October, 1850, and after taking the ordinary double qualifications of his day—M.R.C.S. Eng., L.S.A. Lond.—in 1854, he served as house surgeon at the hospital. In 1862 he proceeded to the M.D. degree at St. Andrews University, and began private practice at Stogursey, Somerset. Shortly afterwards he moved to Croydon, where he joined an already existent firm, and where he practised for 30 years, being surgeon to the Croydon Hospital and consulting physician to the Freemasons' Institute, Croydon. In about 1893 he moved to Worthing. He was a J.P. both for Surrey and Sussex.

Mr. T. B. Johnston will begin on March 3rd, at University College, London, a course in Anatomy for the Primary Fellowship Examination, specially suited for R.A.M.C. officers who are entering for the examination in May, 1919, under the special terms arranged by the Royal College of Surgeons. Full particulars of the course can be obtained from the secretary of University College.

The War and After.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.

THE total sum raised for this Fund to date amounts to about £21,000, and it is believed that a further amount of £9000 will be required. At a meeting of the executive committee of the Fund held on Feb. 4th, Lieutenant-Colonel Sir Alfred Pearce Gould in the chair, several applications for assistance were received, and grants amounting to £450 were made. Applications (marked Confidential) should be addressed to the honorary secretary of the Fund at 11, Chandos-street, London, W. 1.

THE CASUALTY LIST.

The names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Col. C. M. Begg, C.B., C.M.G., New Zealand M.C., was a student at University College, London, and qualified in 1903. He was a well-known practitioner in Wellington, New Zealand, and at the time of his death was Deputy Director of Medical Services of the New Zealand Overseas Forces.

Major H. G. Gibson, R.A.M.C., was a student at Guy's Hospital and qualified in 1907. He died in France from pneumonia following influenza.

Lieut. F. P. M. Luett, Austr. A.M.C.

OBITUARY OF THE WAR.

MYRDDIN EMRYS JONES, M.R.C.S. ENG., SURGEON-LIEUTENANT, ROYAL NAVY.

Surgeon-Lieutenant M. E. Jones, who died on service of pneumonia at Granton Naval Hospital, Edinburgh, on Dec. 4th, at the age of 23 years, was second son of Alderman R. E. Jones, of Boderwydd, Llanberis, and brother of Captain E. H. Jones, R.A.M.C., who was repatriated from Germany on Dec. 13th. Educated at Llanberis County School, where he passed the London Matriculation Examination, and at St. Thomas's Hospital, he took the Conjoint Diploma in January, 1918, and obtained a commission as temporary surgeon in the Navy. After serving as house surgeon at St. Thomas's Hospital he was appointed to H.M.S. *Indomitable*.



CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Lieut. W. M. McGeagh, South Lancs. Regt., died from pneumonia following influenza, youngest son of Dr. R. T. McGeagh, of Liverpool.

Lieut. A. W. Hooley, M.C., A.S.C., attached Queen's, Royal West Surrey Regiment, accidentally killed, only son of Dr. A. Hooley, of Cobham, Surrey.

THE HONOURS LIST.

The following is the continuation of the list the first part of which was given in THE LANCET of Feb. 15th:—

The Military Cross.

Temp. Capt. CHARLES HUMPHREY LLOYD.—For great courage in guiding squads with wounded through Masnières and the ground south-east of Rumilly on the night of Oct. 1-2nd, 1918. He dressed a wounded officer in the open during a heavy burst of fire and got him away to safety. On Oct. 3rd he searched for wounded officers under fire, dressed their wounds, and brought them in.

Temp. Capt. **GEORGE BARTON McCALL**.—For conspicuous gallantry and devotion to duty. His battalion took up an advanced position of readiness in Jackson's Ravine early on Sept. 19th, 1918, and was for several hours exposed to concentrated shell fire. During this period he moved freely about attending to wounded, both of his own battalion and another unit, and showing total disregard for his personal safety. During the entire day his conduct was most exemplary, and he undoubtedly saved many lives.

Capt. **ALEXANDER EDWARD MACDONALD**, Can. A.M.C.—During the attack on Upton Wood on August 3 th/31st, 1918, he worked in the open, under heavy fire, attending to and dressing the wounded, remaining at his duty until all the wounded were cleared, in spite of the heavy shelling. On one occasion a shell fell close to him, killing two men and severely shaking him, but he at once pulled himself together and went on with his work. His gallantry and composure were most marked.

Capt. **HERBERT BRUCE MACWEN**, Can. A.M.C.—For conspicuous gallantry and devotion to duty near Monchy from August 26th to 28th, 1918. He kept in close touch with the battalion in the advance, attending to the wounded in the open under heavy shell fire. He worked continuously, mostly in the open, for 36 hours, and was largely responsible for the small percentage of killed in the unit.

Temp. Capt. **JAMES TAYLOR ROGERS MACGILL**.—For gallantry and devotion to duty on Sept. 19th, 1918. He carried in wounded and dressed them, under intense machine-gun and artillery barrage. Later, on Sugar Loaf, for four hours he helped to carry in wounded after his stretcher-bearers were wounded. His courage and energy were the means of saving many lives.

Temp. Lieut. **BOB ROY MACGREGOR**.—For conspicuous gallantry and devotion to duty throughout the fighting of Sept. 29th, 1918, south of Villers Gislelain. He worked untiringly under heavy shell fire, and, though suffering from gas, attended over 200 cases. He had to carry out his work in the open, there being no available shelters.

Capt. **JOHN DAVIS MARKS**, N.Z. A.M.C.—For conspicuous gallantry during operations near Buvaucourt on Sept. 4th/5th, 1918. While his R.A.P. was twice heavily shelled and several casualties occurred he continued at duty, binding men up and shifting them to shelter in spite of the heavy bombardment. Again on Sept. 7th, when the R.A.P. had been established on the edge of Havrincourt Wood, near Quotient Avenue, the enemy bombarded the place heavily. Under this fire, which had inflicted a number of casualties, he continued with his work. On both occasions his devotion to duty was admirable.

Capt. **CHRISTOPHER NORMAN MATHESON**, Aust. A.M.C.—In the attack on Mont St. Quentin on Sept. 2nd, 1918, he pushed forward behind the first waves, attending the wounded under heavy artillery and machine-gun fire. Later he established a forward post, and through his gallantry and his untiring exertion he saved many lives by getting their wounds expeditiously dressed and evacuating them quickly.

Capt. **ARCHIBALD LANG McLEAN**, Aust. A.M.C.—For conspicuous gallantry and devotion to duty. During the attack on August 8th, 1918, east of Villers Bretonneux, near Amiens, he followed the attacking troops with his section, tending and dressing wounded under fire on the way. Almost immediately after the objective had been taken he established his R.A.P. in the village of Warfuses, where he worked continuously under great difficulties. Later, during the advance on the following day, he established his R.A.P. almost on the jumping off line, where he tended and cared for wounded under heavy artillery fire. His energy and zeal saved many lives.

Capt. **ALEXANDER PATRICK MURPHY**, Aust. A.M.C.—For conspicuous gallantry and devotion to duty near Peronne from August 23rd to 26th, 1918, as R.M.O. of a battalion. He placed his aid-post in a railway cutting, where he dressed the wounded of his own and other units under machine-gun and shell fire. When all our wounded had been cleared he went out and attended to the enemy in the open; while doing so a shell burst in their midst, killing him. He continued at work for another 24 hours before reporting for relief.

Capt. **EDGAR LLEWELLYN FOOT NASH**.—For conspicuous devotion to duty and contempt of danger in caring for wounded under heavy shell fire at Achiet-le-Grand on August 23rd, 1918. He moved about in the open under heavy shelling, dressing men's wounds and preparing them for immediate evacuation with the greatest coolness, setting a very fine example to his staff and to the bearers. It was due to his untiring efforts that the wounded were so successfully and quickly evacuated.

Capt. **REGINALD EDWARD NOWLAND**, Aust. A.M.C.—For conspicuous gallantry and devotion to duty on Sept. 27th, 1918, near Ypres, with the leading battery, which came under heavy shell fire and suffered many casualties. Ignoring all danger, he established an aid-post on the roadside and attended to the wounded. Later in the day, when the batteries moved further forward, he visited all the gun positions and attended to the wounded.

Capt. **LAUREL COLE PALMER**, Can. A.M.C.—During operations from Sept. 2nd/4th, 1918, near Arras, while in charge of squads evacuating wounded, he kept close up to the advancing infantry, directing the collecting and dressing of casualties. The enemy shelling and machine-gun fire was intense, but time after time he went through the barrage with a total disregard of personal safety. On the night of Sept. 2nd the relay post was heavily shelled with gas, but he kept at his work, protected his wounded, and got them to a place of safety. He showed great courage and devotion to duty.

Temp. Capt. (acting Major) **DONOVAN BLAISE PASCALL**.—For conspicuous gallantry and devotion to duty during the operations astride the Arras-Cambrai road on Sept. 2nd, 1918. He was in charge of the evacuation of casualties from the front, and repeatedly made journeys over the shell-swept area around Dury and Eterpigny, locating and maintaining touch with R.A.P.'s and bearer posts. Through his disregard of danger the casualties were speedily evacuated.

Capt. (now Major) **WILLIAM JAMES ELLERY PHILLIPS**, Aust. A.M.C.—For conspicuous gallantry and devotion to duty on Sept. 6th and 7th, 1918, during an advance on Rollet. He worked continuously for 48 hours in charge of the evacuation of the wounded from the forward aid-posts. Although the area was heavily shelled he got his ambulance cars right up and cleared the wounded with great rapidity. His energy and perseverance set a splendid example to those working with him.

Temp. Capt. **HAROLD JOHN PICKERING**.—For conspicuous gallantry and devotion to duty from Sept. 25th to 30th, 1918, near Cambrai, especially one night, when, hearing that there was a congestion of wounded at a R.A.P., he went forward through heavy shell fire and remained all night, collecting bearers from every available source and supervising the clearing of the post. Throughout the whole period he only had one other officer to assist him in the forward area. He inspired his men with his own cheerfulness, energy, and endurance.

Capt. **DAVID TURNBULL RICHARDSON**.—For conspicuous gallantry, initiative, and resource, on Oct. 22nd, 1918, when in command of an advanced dressing station, in evacuating casualties under heavy rifle fire. He has shown similar qualities on several previous occasions.

Temp. Capt. (acting Major) **GEORGE WILLIAM RIDDELL**.—For conspicuous gallantry and devotion to duty during the attack on Gouzeaucourt, Sept. 18th, 1918. He went up to the most forward aid-post to organise the collection and evacuation of the wounded. Though dazed early in the action by the explosion of a shell near him, he carried on his duties untiringly through the day and night, often under heavy shell fire. His coolness and disregard of danger inspired confidence in the bearers, and it was largely owing to him that the wounded were cleared so expeditiously.

Capt. **WESLEY MCCONNELL ROBB**, C.A.M.C.—For conspicuous gallantry and devotion to duty on the Scarpe front from August 26th to 29th, 1918. Shortly after zero his advanced dressing station was blown in by shell fire. Though dazed and partly buried, he immediately dug his orderly out. He then followed the battalion in the attack, organising stretcher squads from prisoners, and evacuating serious cases with the least possible delay. He several times attended serious cases in the firing line.

Temp. Capt. **HENRY ALBERT RONN**.—For conspicuous gallantry and devotion to duty in attending to wounded under heavy shell fire on Oct. 3rd, 1918, near Montbrechain, and on Oct. 9th at Honnechy. On both these occasions he set a fine example under most trying conditions.

Capt. **JOHN ROWLAND**.—For gallantry and devotion to duty during operations against the Tassel on the night Sept. 17th-18th, 1918. He, although dangerously gassed, remained at duty, and for three whole days worked incessantly rescuing our wounded, often in close proximity to the enemy's positions and under an intense fire. Despite much suffering from the effects of the gas he persisted in his efforts, and by his fine example and personal exertions was the means of saving scores of lives.

Capt. **JOSEPH GREGOR SHAW**, Can. A.M.C.—During the operations near Dury, Sept. 2nd-6th, 1918, he was in charge of stretcher-bearers. During the whole period he was constantly on duty. On several occasions he reconnoitred areas which were under heavy shell and machine-gun fire, dressing wounded and arranging for their evacuation in the open. In the vicinity of the windmill he came under heavy fire while attending to his duties. His work throughout was admirable, and his coolness in danger was an excellent example to his stretcher squads.

Lieut. **JOHN ALEXANDER STEWART**.—During the operations astride the Arras-Cambrai road on Sept. 2nd and 3rd, 1918, he displayed conspicuous gallantry and unselfish devotion to duty, attending to the wounded under heavy fire with a disregard of danger that was a splendid example to all.

Temp. Capt. **WILLIAM JOSEPH EDWARD STUTTAFORD**.—Near Malmesby, Sept. 23rd and 24th, 1918, he organised and superintended the evacuation of wounded under heavy shell fire. His courage inspired confidence among his men, and his initiative and resource saved many lives.

Temp. Capt. **ARTHUR MACGREGOR WARWICK**.—For conspicuous gallantry and devotion to duty. After an attack on St. Servin's Farm on August 30th, 1918, when he had cleared his aid-post of all casualties, he organised stretcher-bearers and got in without delay a large number of wounded who were lying out in front exposed to heavy shelling. He carried out similar good work the following day.

Capt. (acting Major) **FRANK WIGGLESWORTH**.—For conspicuous gallantry and devotion to duty on the night of Sept. 11th-12th, 1918, prior to the attack on Havrincourt. Under heavy shell fire he reconnoitred the routes of evacuation and set out his bearer-posts. The next morning, during the attack, he supervised the whole of the evacuation of the wounded, and for the next two days he kept well forward, advancing his cars and posts as circumstances allowed, thus evacuating the wounded with the least possible delay. His disregard of danger set a fine example all round.

Capt. **ERIC MELVYN WYLLIE**, N.Z.A.M.C.—For conspicuous gallantry and devotion to duty south of Cambrai from Oct. 3rd to 8th, 1918. During five days' operations, constantly exposed to enemy fire, he reconnoitred the country for the establishment of bearer relay posts and car-posts. On Oct. 4th, after establishing a car post at Masnières he went forward under heavy fire and established a bearer relay post on the bank of the canal, afterwards going forward and supervising the evacuation of wounded from R.A. posts.

Capt. **HARVEY GORDON YOUNG**, D.S.O., Can. A.M.C.—For conspicuous gallantry and devotion to duty during the operations east of Arras from August 26th to 29th, 1918. He was M.O. to the battalion, and throughout the whole operation followed up the attacking troops. Under heavy machine-gun and shell fire he attended to wounded, and organised stretcher squads of prisoners. He worked unceasingly, and it was entirely due to his personal energy and disregard of personal danger that all the wounded were evacuated before relief.

Distinguished Service Cross.

Surg.-Lieut. **WALTER GRIMSHAW BIGGER**, R.N.—For services with the Royal Marine Artillery Siege Gun Detachment in Flanders. On May 29th, 1918, while he was attending to the wounded in "Carnac" gun position a second shell burst in embrasure. Surg.-Lieut. Bigger continued his work with noteworthy calmness and devotion to duty. The coolness under fire displayed by this officer on other occasions has gained for him the confidence of the officers and men under his medical charge.

The following appointments of medical men to the *Most Excellent Order of the British Empire*, for valuable services rendered in or in connexion with military hospitals, terri-

torial hospitals, war hospitals, auxiliary and civil hospitals, command depôts, convalescent camps, or on other duties of a similar nature in the United Kingdom in connexion with the Army during the war, are announced:—

C.R.E.—Mr. R. Alcock; Mr. A. R. Anderson; Mr. H. G. Frankling; Mr. W. H. O. Greene; Mr. E. G. Hogarth; Mr. R. J. Howard; Dr. W. J. Howarth; Prof. B. May; Dr. W. O. Morton; Dr. F. Nicholson; Dr. A. J. Rice-Oxley; Dr. T. Y. Simpson.

O.B.E.—Mr. R. Y. Aitken; Dr. G. E. Genge-Andrews; Mr. G. J. M. Atkinson; Dr. I. Banks; Dr. R. H. Barter; Mr. W. O. Bentall; Mr. E. J. Blackett; Dr. J. Blomfield; Mr. F. L. G. Brown; Lt.-Col. W. H. Cadge, I.M.S.; Mr. J. Cashin; Mr. J. J. Day; Dr. J. Elliott; Dr. H. B. Elton; Dr. D. Ewart; Dr. F. H. Fairweather; Mr. H. D. Farnell; Dr. E. T. Fison; Dr. J. F. Fleming; Dr. J. V. Fox; Dr. J. D. Giles; Mr. H. J. Godwin; Mr. J. E. Gordon; Dr. B. J. Guillemaud; Dr. J. A. Harrison; Mr. J. H. Harvey; Mr. E. D. H. Hawke; Mr. A. W. Hutton; Dr. Mary E. Jeremy; Mr. J. R. Keele; Mr. O. G. B. Kempe; Dr. M. A. Key; Dr. Mary F. Lister; Dr. C. J. R. MacFadden; Dr. J. Macintosh; Dr. A. M. Mitchell; Mr. H. O. Orrin; Dr. R. C. Peacocke; Dr. G. H. Perival; Mr. C. J. Pinching; Mr. A. Y. Pringle; Dr. F. Radcliffe; Dr. B. Rice; Dr. K. Rogers; Dr. Winifred M. Ross; Mr. S. H. Rouquette; Dr. L. B. Shore; Dr. E. W. Simmons; Dr. C. D. Somers; Dr. Florence A. Stoney; Dr. J. W. Taylor; Dr. B. B. T. Thorne; Mr. J. W. T. Walker; Dr. A. D. Webster; Mr. C. G. E. Wood; Mr. R. A. Worthington.

FOREIGN DECORATIONS.

French.

Légion d'Honneur.—*Croix de Chevalier*: Temp. Capt. (acting Lt.-Col.) J. R. O. Greenlee, D.S.O., R.A.M.C.

Médaille des Epidémies (en Vermeil).—Maj. (acting Lt.-Col.) R. B. Ainsworth, D.S.O., R.A.M.C.; Maj. (temp. Lt.-Col.) J. F. Crombie, D.S.O., R.A.M.C.; Capt. F. H. Guppy, R.A.M.C.; Maj. (acting Lt.-Col.) E. M. O'Neill, D.S.O., R.A.M.C.; Temp. Capt. R. McC. Paterson, R.A.M.C.; Capt. (acting Maj.) F. H. O. Watson, R.A.M.C.; Capt. W. T. Wood, R.A.M.C.

Médaille des Epidémies (en Argent).—Maj. A. W. H. A'Court, Aust. A.M.C.; Capt. (acting Lt.-Col.) H. N. Burroughes, R.A.M.C.; Maj. C. L. Chapman, D.S.O., Aust. A.M.C.; Capt. (acting Maj.) S. J. Clegg, R.A.M.C.; Temp. Capt. R. M. Handfield-Jones, M.O., R.A.M.C.; Capt. A. G. Hebblethwaite, D.S.O., R.A.M.C.; Capt. W. H. Hill, R.A.M.C.; Capt. (acting Maj.) A. M. Hughes, R.A.M.C.; Temp. Capt. L. B. Lempiere, R.A.M.C.; Capt. J. McL. Macfarlane, M.C., R.A.M.C.; Temp. Capt. O. de B. Marsh, R.A.M.C.; Capt. T. J. Murray, R.A.M.C.; Maj. H. Orr, Can. A.M.C.; Capt. (acting Maj.) J. H. Pendered, M.O., R.A.M.C.; Temp. Capt. A. F. S. Sladden, R.A.M.C.; Temp. Capt. A. H. Stevens, R.A.M.C.; Capt. E. S. Taylor, R.A.M.C.

Portuguese.

Military Order of Avis: Third Class.—Surg.-Lieut.-Comdr. B. Taylor, R.N.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

THE King has approved of the appointment of Field-Marshal His Royal Highness the Duke of Connaught and Strathearn as Colonel-in-Chief of the Royal Army Medical Corps.

Lieut.-Col. and Bt. Col. M. H. G. Fell is seconded for service with the R.A.F.

Lieut.-Col. and Bt. Col. R. H. Moore to be acting Colonel whilst specially employed.

Lieut.-Col. J. C. Connor to be acting Colonel whilst specially employed.

C. J. Bond to be temporary Honorary Colonel whilst specially employed.

Temp. Major J. C. Davies relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Temp. Capt. H. K. Wallace relinquishes the acting rank of Lieutenant-Colonel on re-posting.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Majors A. N. Fraser, W. J. Weston, O. Ievers; Capt. G. O. Chambers.

Temp. Capt. J. G. Murray relinquishes the acting rank of Major on re-posting.

To be acting Majors whilst specially employed: Capt. H. V. Stanley; Temp. Capt. J. B. Lester, J. Vallance, J. H. Peek, J. Greene.

Captains to be Majors: Acting Lieut.-Cols. W. K. Beaman, M. P. Leahy, D. F. Mackenzie, W. W. Boyce, J. du P. Langrishe, T. H. Scott, G. F. Rudkin, A. C. Elliott, W. B. Purdon, F. Casement, E. M. Middleton; Brevet-Major H. G. Gibson; Acting Majors A. D. Fraser, J. L. Wood, O. B. MacEwen, M. O. Wilson, L. A. A. Andrews, H. W. Farebrother, C. Cassidy, A. Irvine-Porteous, F. H. M. Chapman, H. M. J. Perry, F. T. Turner, J. E. M. Boyd, J. H. Gurley, V. T. Carruthers.

Temp. Capt. D. M. Hunter and Capt. W. F. Christie relinquish the acting rank of Major on re-posting.

To be acting Majors: Capt. A. Hendry, H. G. Robertson, J. H. M. Froehner; Temp. Capt. H. H. Elliot, A. B. Hallinan, D. B. I. Hallett, A. C. Palmer, A. V. Poyser, C. C. Chance, R. W. P. Jackson, H. G. Pease, C. O. Bodman, H. B. Shepherd, H. H. Hepburn, J. P. Mathie, G. Muir, W. Warnock, H. H. Raw, E. L. Dobson, H. B. Evans, W. S. Martin.

Temp. Capt. Spencer S. Dunn to be Acting Major whilst in command of troops on a Hospital Ship.

Temporary Lieutenants to be temporary Captains: J. Cullen, G. V. Allen.

Temp. Hon. Lieut. D. H. Carter to be temporary Honorary Captain.

O. K. Lang to be temporary Lieutenant.

Officers relinquishing their commissions:—The undermentioned on

ceasing to serve with No. 6 British Red Cross (Liverpool Merchants'

Mobile) Hospital, and retain their honorary rank: Temp. Hon. Lieut.-Col. N. Raw; Temp. Hon. Major F. A. G. Jeans; Temp. Hon. Capt. J. Hayward; S. Raw, H. W. Jones, F. C. Wilkinson. Retaining the rank of Major: Temp. Major E. L. Gowlan, A. Goodale; Temp. Capt. (acting Majors) C. S. Frew, C. A. H. Gee, W. S. Danks, E. G. C. Price, H. B. Atlee, B. F. Bartlett; Temp. Major W. B. Edwards (on appointment under the Ministry of National Service and granted the rank of Lieutenant-Colonel); Temp. Capt. (acting Major) G. V. T. McMichael (retains the rank of Major).

Temp. Hon. Majors, on ceasing to be employed with No. 2 Red Cross Hospital, retain the honorary rank of Major: L. J. Austin, B. Hudson.

Temp. Capt. A. S. Glynn on transfer to R.A.F.

Temp. Capt. (and retain the rank of Captain): C. J. Todd, A. Leeming, H. L. Clift, W. Lilico, F. B. O'Dowd, W. O. Frogoso, P. Stewart, F. G. Ralphs, L. B. C. Handson, W. C. Gore, T. Lovett, G. O. Hutchinson, A. C. Rowsell, A. Ball, R. W. L. Fernandes, I. G. Cobb, R. Dane, F. H. Dodd, W. R. Meredith, F. Thompson, T. Stansfield, T. J. Little; Temp. Hon. Capt. R. A. Chisholm (on ceasing to be employed with No. 8 British Red Cross (Baltic and Oorn Exchange) Hospital, and retains the honorary rank of Captain); Temp. Lieuts. W. Wright and D. A. Johnstone.

Canadian Army Medical Corps.

Temporary Majors to be acting Lieutenant-Colonels: G. Musson (while employed as Chief of the Medical Service at a Canadian General Hospital), G. H. E. Gibson, D.S.O. (while employed as O.C. a Canadian Convalescent Hospital).

Captains to be acting Majors while employed at No. 12 Canadian General Hospital: K. A. MacKenzie, F. B. McIntosh.

South African Medical Corps.

The undermentioned relinquish their commissions on ceasing to be employed with the Union Imperial Service: Temp. Lt.-Col. G. K. Moberley, and retains the rank of Lieutenant-Colonel; Temp. Major G. D. Maynard, and retains the rank of Major.

And retain the rank of Captain: Temp. Capt. I. Healan, W. D. Akers, J. A. Martin, A. J. Milne, A. McWatt Green, J. J. Commerell, E. L. Gaigut.

To be temporary Captains: T. J. Howell, O. C. Murray, T. G. Burnett, A. J. Milne.

Dental Surgeons: H. B. Osler, M. de Villiers.

Temp. Lieut. N. B. Thomson relinquishes his commission and retains the rank of Lieutenant.

SPECIAL RESERVE OF OFFICERS.

Captains to be acting Majors: H. W. H. Holmes, P. Walsh, G. Young, C. H. Brennan, E. R. G. Atkins, A. R. Dale, J. E. Croftins, H. B. Friedlander, E. H. Bradley, H. H. Brown, W. S. Haydock, H. T. Chatfield, W. B. Wood, M. J. B. F. Burke-Kennedy.

Capt. (acting Lieut.-Col.) W. H. L. McCarthy relinquishes his commission and retains the rank of Lieutenant-Colonel.

Capt. G. R. Bruce relinquishes the temporary rank of Major on ceasing to be specially employed.

Capt. C. J. Orde, E. Talbot, C. Johnson, W. O. C. Easton, and E. Mountain relinquish their commissions and retain the rank of Captain.

Capt. M. R. Taylor relinquishes the acting rank of Lieutenant-Colonel and reverts to the acting rank of Major.

Captains relinquishing the acting rank of Major on re-posting: A. R. Dale, D. Mackie, W. A. Miller, J. Walker, J. Adams.

Lieut. J. E. Dingley relinquishes his commission on account of ill-health and retains his rank.

Lieutenants to be Captains: W. A. Fraser, M. O. Simpson, J. F. Twort, W. M. Kerr, W. H. Wallace, A. H. Morris, D. F. Panten, T. G. James, W. G. F. Owen-Morris.

Lieut. N. B. Thomas relinquishes his commission and retains his rank.

TERRITORIAL FORCE.

Lieut.-Col. F. W. Higgs to be an Assistant Director of Medical Services, and to be acting Colonel whilst so employed.

Major A. J. Riddett to be acting Lieutenant-Colonel whilst specially employed.

Major H. D'A. Blumberg relinquishes his commission and retains his rank.

Capt. C. Nyhan and J. C. S. Dunn to be acting Majors whilst specially employed.

Capt. (acting Majors) A. A. Hingston and T. S. P. Parkinson relinquish their acting rank on ceasing to be specially employed.

Captains to be acting Majors whilst specially employed: E. J. Boome, R. J. Chapman, J. A. Bell, M.C.

Capt. W. S. McCune relinquishes his commission and retains the rank of Captain.

Capt. L. T. Whelan to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

Capt. (acting Major) O. L. Appleton to be Major.

Capt. A. E. Barnes, from 3rd Northern General Hospital, to be Captain.

1st Eastern General Hospital: Major (acting Lieut.-Col.) H. A. Ballance relinquishes his acting rank and is restored to the establishment.

Capt. (acting Major) W. B. Marshall relinquishes his acting rank on ceasing to be specially employed.

3rd Scottish General Hospital: Capt. A. W. Harrington is restored to the establishment.

5th Southern General Hospital: Capt. (acting Major) P. H. Green relinquishes his acting rank on ceasing to be specially employed, and remains seconded.

2nd Eastern General Hospital: Capt. W. B. Prowse relinquishes his commission, and retains the rank of Captain.

2nd Western General Hospital: Major (acting Lieut.-Col.) E. N. Cunliffe relinquishes his acting rank on ceasing to be specially employed.

Major A. Wilson to be acting Lieutenant-Colonel whilst specially employed. Major A. H. Griffith relinquishes his commission and retains his rank.

Capt. G. Wright is restored to the establishment.

1st Southern General Hospital: Capt. J. W. Stretton is seconded for service overseas.

1st London Sanitary Company: Capt. W. N. W. Kennedy to be acting Major whilst holding appointment as Deputy Assistant Director of Medical Services.

Lieut. F. G. Caesar to be Captain.

2nd London Sanitary Company: Capt. W. K. Pabury to be acting Major whilst specially employed.

Capt. (acting Major) J. H. Wood

relinquishes his acting rank on vacating his appointment of Deputy Assistant Director of Medical Services.

3rd Southern General Hospital: Major (temp. Lieut.-Col.) A. P. Dodds-Parker relinquishes his temporary rank.

4th Northern General Hospital: Capt. H. B. W. Smith is restored to the establishment.

Attached to Units other than Medical Units.—Surg.-Major H. Walte, from the Northern Command Signal Company, to be Major.

TERRITORIAL FORCE RESERVE.

Major J. M. Gover, from 1st Northern Field Amb., to be Major.
Capt. H. C. Adams, from 2nd Wessex Field Amb., to be Captain.
Capt. C. S. Brebner, from 1st London Field Amb., to be Captain.
Capt. W. R. Pierce, from 2nd West Lancs. Field Ambulance, to be Captain.

Capt. J. H. Hunter, from 3rd Highland Field Amb., to be Captain.
Capt. N. Gebbie, from 2nd London Sanitary Company, to be Captain.

Capt. W. A. Robertson, from Attached to Units other than Medical Units, to be Captain.

Capt. W. Snelton, from 3rd West Riding Field Amb., to be Captain.
Lieut. T. W. Emerson relinquishes his commission on ceasing to be employed, and retains the rank of Lieutenant.

Lieut. A. G. Jennings to be temporary Captain whilst Commandant, Prisoner of War Camp.

ROYAL AIR FORCE.

Medical Branch.—Major A. V. J. Richardson to be acting Lieutenant-Colonel whilst employed as Lieutenant-Colonel.

A. S. Glynn (temporary Captain, R.A.M.C.) is granted a temporary commission as Captain.

G. McK. Thomas is granted a temporary commission as Lieutenant.
Capt. A. E. McCulloch is transferred to Unemployed List.

Capt. L. G. Davies relinquishes his commission on account of ill-health, and is permitted to retain his rank.

The undermentioned are granted temporary commissions as Lieutenants.—T. H. Roberts, R. D. Jones.

Medical (Administrative).—L. W. Jones is granted a temporary commission as Second Lieutenant, and to be acting Captain whilst specially employed.

Dental Branch.—Lieut. H. Wardill to be Lieutenant, from (A.).

Medical News.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR THE DEGREES OF M.B., CH.B.

Part II. (completing examination).—Alan Gabriel Bodman, Elizabeth Casson, Evelyn Bessie Salter, Arthur Denis Symons, and Reginald Frank White.

Part I. only.—Sukhasagar Datta, and Thomas Henry Algernon Plinniger.

EXAMINATION FOR THE DIPLOMA IN PUBLIC HEALTH.

John Wesley Gilbert.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—

Meeting of Council.—An ordinary meeting of the Council was held on Feb. 13th, Sir George Makins, the President, being in the chair.—It was resolved (1) that Diplomas of Membership should be granted to 62 successful candidates; (2) that, in conjunction with the Royal College of Physicians, Diplomas in Public Health should be granted to seven successful candidates; (3) that a donation of 50 guineas should be made to the War Emergency Fund of the Royal Medical Benevolent Fund.

—Dr. W. S. A. Griffith was re-appointed the representative of the College on the Central Midwives' Board for the period of one year from March 31st, 1919, and he was thanked for his services on the Board during the past year.—Mr. G. Bellingham Smith was reappointed for four years the representative of the College on the managing committee of the British Hospital for Mothers and Babies, Woolwich.—The President reported that Lieutenant-Colonel T. B. Layton, who was to have given an Hunterian lecture on Feb. 10th, had been unable to obtain leave of absence to proceed to England from Alexandria, where he was stationed, and that accordingly it had been necessary to postpone his lecture, for which it was hoped a date might be arranged later in the year.

—The President reported (1) that in pursuance of the provisions of the Bradshaw Bequest he had appointed Sir Charles Ballance as Bradshaw lecturer for the ensuing year; (2) that, as requested by the Council at their last meeting, he had addressed a letter to the Home Secretary urging that in any legislation relating to the public health provision should be made for ensuring an adequate supply of material for the anatomical and surgical instruction of students and practitioners of medicine; (3) that the committee on the special examination for the Fellowship had drawn up the regulations. These have already appeared in THE LANCET, but they were modified in that the examination will be open to surgeons (men or women) who have done commendable work in connexion with His Majesty's Forces during the war, provided that the other conditions are fulfilled.—A letter was read from the Council of the Medico-Psychological Association of Great Britain and Ireland enclosing a copy of a report by the Association on Lunacy Legislation and expressing the hope that it would receive the careful consideration of the College. The matter was referred to a committee.—The President reported that a meeting of the

Fellows would be held at the College on Thursday, July 3rd next, for the election of two Fellows into the Council in the vacancies occasioned by the retirement in rotation of Sir Berkeley G. A. Moynihan and by the death of Mr. L. A. Dunn, and the Secretary stated that March 17th would be the last day for the nomination of candidates and that a voting paper would be sent on April 1st to every Fellow of the College whose address is registered at the College.

Diplomas of M.R.C.S. were conferred upon 62 candidates (4 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Examining Board, and complied with the by-laws. The names and schools of the successful candidates are included in the list given in THE LANCET of Feb. 8th (p. 239) of candidates granted the licence to practise physic by the Royal College of Physicians of London.—The Diploma of F.R.C.S. was conferred upon Frank Beauchamp Martin, M.B., B.S. Melb., Melbourne University and St. Bartholomew's Hospital, who passed the necessary examinations in 1914, and has now complied with the by-laws of the College.

The Hunterian Oration was delivered at the College on Friday last, Feb. 14th, by Major-General Sir Anthony Bowlby (see p. 285), and in the evening of the same day the Hunterian Festival Dinner was held, the President presiding.

Dr. J. Charlton Briscoe will deliver an Arris and Gale lecture on the Mechanism of Post-operative Massive Collapse of the Lungs, at the Royal College of Surgeons of England on Monday, Feb. 24th, at 5 p.m.

MATERNITY AND CHILD WELFARE IN SOUTHWARK.—A conference will be held in the Town-hall, Waltham, on Tuesday, Feb. 25th, at 5.30 p.m., to consider closer co-operation between all who are interested in the maternity and child welfare of the borough.

HOOKWORM DISEASE IN BENGAL.—The Governor of Bengal, in a letter to the Sanitary Board, invites attention to the importance of adopting measures for the extermination or lessening of hookworm disease in the province. He estimates the percentage of the population infected by the disease as 80 per cent., giving a total of some 36 million carriers. The disease, which even in mild cases is responsible for inertia and lowered vitality, can, the Governor states, be cured cheaply and effectively, but can be prevented only by ridding the infected soil of the virus of the disease. The latter can only be achieved by wide diffusion of knowledge regarding the nature and cause of the condition, followed by a revolutionary change in the hygienic habits of the population.

AMERICAN GIFTS.—A quantity of valuable hospital stores and comforts supplied by the American Red Cross for the use of Americans treated in the U.S. Base Hospital at Portsmouth has been given to the Mayor of Portsmouth on behalf of the town, for distribution amongst the local hospitals, in appreciation of the kind reception of the Americans in Portsmouth. Much constructional work was undertaken by the Americans, involving the purchase of building and other materials, to adapt the Portsmouth Asylum for the purposes of a hospital. The whole of this has been handed over to the Asylum Committee as compensation for any dilapidations or alterations that will need to be carried out to restore the building to its original use.

THE MEDICO-POLITICAL UNION.—In view of "the crisis in the medical profession," the Council of the Medico-Political Union is convening a mass meeting of the medical profession at Wigmore Hall, Wigmore-street, London, W., on Sunday next, Feb. 23rd, at 3.30 p.m. The President, Mr. Frank Coke, will preside, and the following resolution will be proposed:—

That in view of the far-reaching changes inevitable in the medical services of this country consequent on the coming Ministry of Health, it is essential that the profession should be solidly and democratically organised on a trade union basis to enable it to negotiate effectively with the Government in the interests of the community no less than those of the profession.

ST. MARK'S HOSPITAL: THE LORD MAYOR'S CHALLENGE.—The Lord Mayor of London, presiding at the annual general meeting of the governors of St. Mark's Hospital, City-road, on Feb. 13th, referring to the £800 still required to acquire the vacant building site adjoining the hospital, said he would be very glad to give £50 if the balance could be raised by March 15th. The report showed that beside the ordinary patients a number of wounded soldiers had been treated during the past year—many of them straight from France with injuries to the abdomen which had necessitated their being kept under treatment for very long periods—some for over eight months. But all those patients, except one, had been discharged fit for duty. The War Office was very pleased with the results. The Ministry of Pensions was arranging to send other patients. During the year 1918 the total number of new out-patients was 1479. The number of in-patients admitted during the same period was 705.

THE MEDICAL WORK OF THE MINISTRY OF NATIONAL SERVICE.

THE medical side of the Ministry of National Service will be transferred to the Ministry of Pensions, and arrangements are now in progress to effect the transfer. The medical and secretarial staffs affected are at the headquarters of the Ministry of National Service and at the offices of regions and areas of the Ministry, and will continue to carry out their duties as at present under that Service, but will receive due notice of the arrangements for transfer. The only officers not affected by the transfer are the Chief Commissioner of Medical Services and the Branch (M4) dealing with demobilisation of medical and dental officers on service with the armed forces of the Crown. These will remain as at present in the Ministry of National Service.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The New Parliamentary Session.

BOTH Houses of Parliament have now voted the Address in reply to the Speech from the Throne. The House of Commons is in the first place devoting itself to a revision of the Rules of Procedure so as to expedite the course of Parliamentary business. Some of the Government Bills which are deemed urgent will not be long in being presented.

Ministry of Health Bill.

Dr. ADDISON (President of the Local Government Board) on Monday, Feb. 17th, presented a Bill in the House of Commons "to establish a Ministry of Health and a Board of Health to exercise in England and Wales and in Scotland respectively powers with respect to health and local government and for purposes connected therewith." It was read a first time.

Text of Bill.

The Bill has been published and the following are its principal clauses:—

Clause 1 (Establishment of Minister):—

For the purpose of promoting the health of the people throughout England and Wales, and for the purpose of the exercise of the powers transferred or conferred by this Act, it shall be lawful for His Majesty to appoint a Minister of Health (hereinafter called "the Minister"), who shall hold office during His Majesty's pleasure.

Clause 2 (General powers and duties of Minister in relation to health):—

It shall be the duty of the Minister to take all such steps as may be desirable to secure the effective carrying out and coördination of measures conducive to the health of the people, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons engaged in health services.

Clause 3 (Transfer of powers):—

(1) There shall be transferred to the Minister: (a) all the powers and duties of the Local Government Board; (b) all the powers and duties of the Insurance Commissioners and the Welsh Insurance Commissioners; (c) all the powers of the Board of Education with respect to attending to the health of expectant mothers and nursing mothers and of children who have not attained the age of five years and are not in attendance at schools recognised by the Board of Education; (d) all the powers of the Privy Council and of the Lord President of the Council under the Midwives Acts, 1902 and 1918; (e) such powers of supervising the administration of Part I. of the Children Act, 1908 (which relates to infant life protection), as have heretofore been exercised by the Secretary of State. Provided that (1.) the power conferred on the Insurance Commissioners by the proviso to Subsection (2) of Section 16 of the National Insurance Act, 1911, of retaining and applying for the purposes of research such sums as are therein mentioned shall not be transferred to the Minister, but the duties heretofore performed by the Medical Research Committee shall after the date of the commencement of this Act be carried on by or under the direction of a Committee of the Privy Council appointed by His Majesty for that purpose, and any property held for the purposes of the former Committee shall after that date be transferred to and vested in such persons as the body by whom such duties as aforesaid are carried on may appoint, and be held by them for the purposes of that body; and (2.) in such matters of a judicial nature under the National Insurance (Health) Acts, 1911 to 1918, as may be prescribed under those Acts, the powers and duties of the Insurance Commissioners and the Welsh Insurance Commissioners by this Act transferred to the Minister shall be exercised by the Minister through a special body or special bodies of persons constituted in such manner as may be so prescribed.

(2) It shall be lawful for His Majesty from time to time by Order in Council to transfer to the Minister—(a) all or any of the powers and duties of the Board of Education with respect to the medical inspection and treatment of children and young persons; (b) all or any of the powers and duties of the Minister of Pensions with respect to the health of disabled officers and men after they have left the service; (c) all or any of the powers and duties of the Secretary of State under the Lunacy Acts,

1890 to 1911, and the Mental Deficiency Act, 1913; (d) any other powers and duties in England and Wales of any Government department which appear to His Majesty to relate to matters affecting or incidental to the health of the people.

(3) It shall be lawful for His Majesty from time to time by Order in Council to transfer from the Minister to any other Government department any of the powers and duties of the Minister relating to the matters specified in the First Schedule to this Act, and any other powers and duties of the Minister which appear to His Majesty not to relate to matters affecting or incidental to the health of the people. And it is hereby declared that it is the intention of this Act that, in the event of provision being made by Act of Parliament passed in the present or in any future session for the revision of the law relating to the relief of the poor and the distribution amongst other authorities of the powers exercisable by boards of guardians, there shall be transferred from the Minister to other Government departments such of the powers and duties under the enactments relating to the relief of the poor then vested in the Minister (not being powers or duties relating or incidental to the health of the people) as appear to His Majesty to be such as could be more conveniently exercised and performed by such other departments.

(4) His Majesty may by Order in Council make such incidental, consequential, and supplemental provisions as may be necessary or expedient for the purpose of giving full effect to any transfer of powers or duties by or under this section, and may make such adaptations in the enactments relating to such powers or duties as may be necessary to make exercisable by the Minister and his officers or by such other Government department and their officers, as the case may be, the powers and duties so transferred.

(5) In connection with the transfer of powers and duties to or from the Minister by or under this Act, the provisions set out in the Second Schedule to this Act shall have effect.

Clause 4 (Consultative Councils):—

(1) It shall be lawful for His Majesty by Order in Council to establish consultative councils for giving, in accordance with the provisions of the Order, advice and assistance in connection with such matters affecting or incidental to the health of the people as may be referred to in such Order. (2) Every such council shall include persons of both sexes, and shall consist of persons having practical experience of the matters referred to the council.

Clause 5 (Provisions as to Wales):—

The Minister may establish an office in such town in Wales as he may determine, for the exercise and performance in Wales, through such officers as the Minister may appoint for the purpose, of any of the powers or duties transferred to the Minister by this Act from the Welsh Insurance Commissioners.

Clauses 6, 7, and 8 provide, respectively, for the staff and remuneration of the Minister and the officials of the department; for the official style of the Minister; and for the regulations as to Orders in Council. The Minister will receive £5000 per annum, and in the expenses of the Ministry provision is made for the payment of Consultative Councils.

Clause 9 (Application to Scotland):—

This Act shall apply to Scotland, subject to the following modifications:—(1) Section 1 of this Act shall apply to Scotland as it applies to England and Wales, with the substitution of a Scottish Board of Health (hereinafter referred to as "the Board") for the Minister; and accordingly references in this Act to England and Wales shall be construed as references to Scotland, and references to the Minister or the Ministry shall, so far as applicable, be construed as references to the Board. (2) The Secretary for Scotland shall be substituted for the Secretary of State, and the Local Government Board for Scotland and the Scottish Insurance Commissioners shall respectively be substituted for the Local Government Board and the Insurance Commissioners, and in Subsection (2) of Section 3 the Scottish Education Department shall be substituted for the Board of Education. (3) The Board shall, as at first constituted, consist of the existing members of the Local Government Board for Scotland and of such of the Scottish Insurance Commissioners as the Secretary for Scotland shall appoint, and shall at all times comprise, in addition to the persons who by virtue of their office are under the existing law members of the Local Government Board for Scotland, a member of the Faculty of Advocates of not less than seven years' standing, and a registered medical practitioner who is also registered on the Medical Register as the holder of a diploma in sanitary science, public health, or State medicine, under Section 21 of the Medical Act, 1886. The number of members (other than *ex officio* members) shall at no time exceed six, and subject as aforesaid the power of appointing such members shall be exercisable by His Majesty on the recommendation of the Secretary for Scotland. The Secretary for Scotland shall be President of the Board, and such member thereof as the Secretary for Scotland, with the approval of His Majesty, may designate shall be Vice-President, and be Chairman of the Board in the absence of the President. *The Vice-President and other members of the Board (not being members ex officio) shall receive such salary or remuneration as the Treasury may from time to time determine.* Provided that persons qualified to be in the first instance appointed members of the Board shall, whether so appointed or not, have the like right of transfer as, and upon such transfer shall be deemed to be, persons transferred and attached to the Board in pursuance of this Act. (4) The Midwives (Scotland) Act, 1915, shall be substituted for the Midwives Acts, 1902 and 1918, and the *Edinburgh Gazette* for the *London Gazette*. References to the Welsh Insurance Commissioners shall not apply. (5) Section 12 of the New Ministers and Secretaries Act, 1915, shall not apply, but a Parliamentary Under Secretary may be appointed by the Secretary for Scotland, and there shall be paid to any Under Secretary so appointed such remuneration as may be fixed by the Treasury. The office of an Under Secretary so appointed shall not render the holder thereof incapable of being elected to, or sitting or voting as a Member of, the Commons House of Parliament.

Clause 10 deals with consequential modifications of the Insurance Act. The other clauses in the main deal with details of machinery.

HOUSE OF COMMONS.

Medicine in the House of Commons.

Sir Watson Cheyne has been appointed chairman of the newly formed House of Commons Medical Committee, which consists of Members who possess a medical or surgical degree, or who are interested in medical or scientific matters. The committee will exchange views upon all proposed legislation which has relationship to any medical or allied question. The deliberations will be aimed to avoid the expression of conflicting medical or scientific opinions in Parliamentary debate by arriving at a common view where possible. The Committee will also invite reports from, and hold conferences with, medical and scientific bodies. Major A. C. Farquharson is secretary to the Committee, and Sir William Whitla, Lieutenant-Colonel N. Raw, and Captain W. E. Elliott form the executive committee. It was decided that the Committee should take an early opportunity of meeting Dr. ADDISON on various matters of medical interest.

THURSDAY, FEB. 13TH.

Artificial Limbs.

Answering Mr. PENNEFATHER, Sir J. CRAIG (Parliamentary Secretary to the Ministry of Pensions) said: The Pensions Minister is examining the problem of artificial limb supply in all its bearings, and has appointed a committee to consider and report upon the following matters—namely, (1) whether, and in what respects, the existing arrangements with regard to supply, fitting, repair, and refitting should be modified; (2) whether it is desirable that the Ministry should provide one or more institutions for the supply and repair of limbs and should employ therein partially disabled or limbless men; and (3) whether the existing arrangements for the supply of surgical instruments are satisfactory and, if not, how they can be improved. The members of this committee will be Mr. Herbert Guedalla, chairman, and the honourable and gallant Members for the Reigate Division of Surrey (Brigadier-General G. H. Cockerill) and for Nelson and Colne (Captain Albert Smith), who have kindly consented to act together with Sir Charles Kenderdine, K.B.E., and a Reading surgeon.

In reply to a further question by Mr. PENNEFATHER, Sir J. CRAIG said: The number of men whose stumps are healed awaiting the fitting of artificial limbs on Feb. 1st was 2832, and the number of men whose stumps are not sufficiently healed for the fitting to take place is 5321. Arrangements for the repair of artificial limbs are now made by the local committees. From the returns available the arrangements appear to be working well, and I do not know of any arrears. There has not yet been any general provision of spare limbs. The promise made by the late Pensions Minister was that the provision of spare limbs would be undertaken when the arrears in the supply of first limbs had been worked off. In urgent cases, however, such as those of men going abroad or men in special need because of their particular occupations, spare limbs have already been provided. The whole question is being carefully considered.

Colonel YATE: Are these limbs supplied to officers?—Sir J. CRAIG: Yes, Sir.

After-care of Tuberculous Ex-Service Men.

Mr. PENNEFATHER asked the Parliamentary Secretary to the Ministry of Pensions whether the Treasury had sanctioned a yearly expenditure for the after-care of tuberculous ex-service men, and would he state the date and the amount so sanctioned, and also how many appointments had been made in connexion with this matter; and whether any scheme had yet been formulated for this purpose.—Sir J. CRAIG answered: Sanction for the yearly expenditure of £20,000 was given in May last, and thereupon a scheme for the domiciliary visiting of tuberculous ex-service men was drawn up and considered in consultation between the departments concerned—namely, the Ministry of Pensions, the Local Government Board, and the National Health Insurance Commission. On Dec. 4th last, the Local Government Board issued to the local authorities an explanatory circular. I am unable to say how many appointments have been made by the local authorities. Special appointments would not be necessary in all areas, as the scheme is an extension of the arrangements which in many districts were already in existence.

Ministry of Health.

Mr. G. LOCKER-LAMPSON asked the Leader of the House when the Government proposed to appoint a Minister of Health.—Mr. BONAR LAW replied: It is the intention of the Government to proceed with a Bill setting up a Ministry of Health at the earliest possible date.

Mr. G. LOCKER-LAMPSON: Pending the appointment of a Minister of Health, who will advise the Government in regard to the health side of housing?—Mr. BONAR LAW: That will be done in the meantime by the Local Government Board, I presume.

Missing Officers and Men.

Mr. CHURCHILL (Secretary for War), in the course of a reply to Mr. JOYNSON-HICKS, stated that there were still about 64,800 officers and men reported "missing" whose fate remained to be determined. As a preliminary step to recover from Germany all who might still be detained there on account of illness or any other cause after the great majority of the British prisoners of war had been repatriated, medical units fully staffed and equipped were sent into each army corps district in the country with orders to search every camp, prison, mine, asylum, hospital, or anywhere else, with a view to gathering in all that might be found, both sick and well. The former were concentrated in central hospitals in each army corps district and moved from there by hospital train. Other Allied powers undertook the same service and each collected all of every Allied nationality. The German authorities called for a complete roll of all Allied prisoners still in the country on Jan. 25th, and issued a proclamation threatening heavy penalties against any who did not bring those of whom they knew to notice. A list of those who were known to have been prisoners of war and have not yet been repatriated, or whose death had not been officially reported, was in course of preparation. It would be presented to the German Government with the demand that they should account for every one of them. A central inquiry office under British supervision would shortly be established at Frankfurt, from which inquiries regarding any who might still be in Germany would be prosecuted.

FRIDAY, FEB. 14TH.

Tuberculous Ex-Service Men.

Mr. HOGGE, in moving an amendment to the address on the subject of pensions administration, mentioned that there were no fewer than 50,000 discharged men who were suffering from tuberculosis and only a small proportion of them were receiving the attention to which they were entitled.

Lieutenant-Colonel RAW said that a very large number of the men in question had contracted tuberculosis owing to the rigours of active service. Tuberculosis if dealt with in its early stages was curable. A few months in a sanatorium was not sufficient to cure tuberculosis, and some more adequate scheme was required to treat the disease with success. A long and expensive treatment was necessary, and he appealed to the Government earnestly to appoint a Select Committee, which would deal with tuberculosis alone as it affected men discharged from the services. He urged also that arrangements should be made for an immediate and adequate form of treatment. While there was delay the men were dying. The arrangements, which ought to include established colonies and open-air treatment, should be under the direct control of the Government. The men were now being passed on to the local authorities. He hoped that the Government would fully recognise its responsibility for men who had contracted and developed tuberculosis while in the service of the country.

Sir H. KINGSLEY WOOD complained of the delay in London in admitting to sanatoriums discharged men suffering from tuberculosis. To obtain benefit a patient must be under treatment for 12 months, yet during the past few months no fewer than 339 men discharged themselves from sanatoriums in London after one month's treatment, 467 after two months, 258 within three months, and 105 after four months. In fact, only 20 discharged soldiers in London last year stayed in a sanatorium of their own free will for more than six months. He had come to the conclusion that there was need of more humane and sympathetic treatment in the sanatoriums.

Sir J. CRAIG (Parliamentary Secretary to the Ministry of Pensions), in the course of his reply, said that steps had been taken to improve the treatment of cases of tuberculosis. The man was given priority over any other case of tuberculosis requiring treatment. Most of the cost of treatment was paid and the accommodation in the institutions was increased. Improvements had been made in the after-care and home treatment. Extended treatment had been given in early cases and graduated employment found in agriculture or other suitable industries. He went on to mention that Colonel Webb had been appointed Director-General of Medical Service at the Ministry of Pensions, and he would carry on the treatment required by disabled soldiers and sailors after they had left hospital. The Ministry had taken over the National Service Medical Board and had set up a strong committee to increase the supply, fitting, and repair of artificial limbs and surgical appliances.

Mr. HOGGE withdrew his amendment.

MONDAY, FEB. 17TH.

Irish Housing.

Answering Mr. LYNN, Mr. BONAR LAW (Leader of the House) stated that housing proposals on similar lines to those contained in the English Bill were at the present moment under the consideration of the Government for Ireland.

Ireland and the Ministry of Health.

Mr. LYNN asked the Leader of the House whether the Ministry of Health Bill would apply to Ireland.—Major ASTOR (who replied) said: The answer is in the negative.

Artificial Limbs.

Answering Mr. PENNEFATHER, Sir J. CRAIG said: The rate of progress in the fitting of artificial limbs is governed by the limits of accommodation in the fitting hospitals and of the output of limbs by the limb-makers. The number of men on the waiting list is large, but actually it represents what is now a normal two months' work for the fitting hospitals.

War Bonus to Panel Practitioners.

Sir KINGSLEY WOOD asked the representative of the National Insurance Commissioners whether the National Insurance Commissioners proposed to pay a war bonus to panel doctors; if so, under what statutory authority and from which fund was such payment being made; whether such payment was being made upon the basis of the number of insured persons upon a doctor's list or otherwise; and what was the maximum amount, if any, payable to any doctor, and the estimate of the total cost of such bonuses.—Mr. PRATT replied: Early in last year the Chancellor of the Exchequer received a deputation of insurance practitioners, and in reply to their representations promised them a supplementary remuneration in respect of the increased cost of living and practice expenses in certain cases, the details of which are set out in a memorandum of which I am sending the honourable Member a copy, as they are too long for convenient exposition in an oral reply. The total cost cannot be accurately estimated until all the applications have been dealt with, but it is not expected to exceed £250,000. It will be paid under the statutory authority of the Appropriation Act from Exchequer moneys voted by Parliament for the purpose of supplementing the Exchequer moneys approximating to some £2,000,000 annually expended on medical remuneration apart from the funds derived from insurance contributions.

Maternity and Child Welfare.

Major ASTOR (Parliamentary Secretary to the Local Government Board), in reply to Mr. T. GRIFFITHS, said: Local authorities representing 98.25 per cent. of the population of England and Wales are now carrying out schemes for maternity and child welfare. On the 1st inst. 3038 women were employed as health visitors, and 1365 maternity and child-welfare centres had been established, and a number of other services recommended in the Local Government Board's circulars are being undertaken for the physical welfare of mothers and young children. This work is done chiefly by local authorities, but also by voluntary agencies working with the local authorities, all the metropolitan agencies working with the local authorities. All the metropolitan and county boroughs and 59 out of the 61 county councils outside London have taken action entitling them to the grant. The county schemes cover most of the districts in the county areas which have not adopted separate schemes, but there are still 68 districts representing 1.75 per cent. of the population for which action has not yet been taken. It is hoped that these will shortly be covered by the extension of county schemes. The grant in aid of maternity and child welfare, which will be distributed in the current year, is estimated to amount to about £200,000.

TUESDAY, FEB. 18TH.

Demobilisation of Medical Men.

Answering Mr. F. ROBERTS, Captain GUEST (on behalf of the Secretary for War) said: Since the armistice 1502 temporary commissioned medical officers of the R.A.M.C. have been demobilised and returned to civil life. This represents in all theatres of war and in the United Kingdom 13.2 per cent. of the total number employed, which compares with 15.1 per cent. of all ranks. It follows, of course, that if units could be demobilised as such it might be possible to release more medical officers, but at the same time it should be understood that the work of medical officers is centralised to the greatest possible extent to avoid wastage. Every endeavour is being made to relieve as many medical officers as possible, but so long as the present system is maintained of demanding early demobilisation of individual officers the process must be retarded, as in many cases substitutes have to be provided.

Combating Venereal Disease.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board whether a committee would be appointed to inquire and report upon the best methods of combating venereal disease.—Major ASTOR replied: In conjunction with the Admiralty, the War Office, and the Air Ministry, the President of the Local Government Board has recently appointed an inter-departmental committee to consider the prevention and spread of infectious disease arising

in connexion with demobilisation, and this committee is dealing, among others, with venereal diseases, recognising the urgency of the matter. I may remind my honourable friend that the Royal Commission on Venereal Diseases reported as recently as 1916.

Combating Influenza.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board what steps his department was taking with a view to combating the influenza epidemic.—Major ASTOR replied: Influenza may be combated (a) by continuous research and intelligence work; (b) by impressing on each member of the public what in the present knowledge he should do in regard to the disease; and (c) by the action of the local health authorities and other bodies for lessening the public opportunities of infection and assisting in the provision of medical nursing and domestic aid to those attacked. My department is energetically pursuing all three lines, and my right honourable friend is continuing and endeavouring to amplify the action which his predecessors directed to be taken for this purpose. In connexion with research and intelligence work the medical officers of the Board are now in active co-operation with other experts outside the department by means of a committee which meets weekly. The action recommended to the public and to local authorities is being further reviewed in a memorandum which will be issued this week.

WEDNESDAY, FEB. 19TH.

Demobilisation of Medical Men.

Mr. LYLE asked the Secretary for War whether he would consider speeding up the demobilisation of medical men and nurses in view of the fact that the civil hospitals were seriously understaffed and also that the civil population was suffering seriously and unnecessarily owing to the Army retaining so many members of these professions.—Captain GUEST (on behalf of Mr. CHURCHILL) said: Every effort is being made to release as many medical men and nurses from the Army as can be spared, but so long as the hospitals both at home and abroad have to care for such large numbers of sick and wounded it will be necessary to retain a large number of medical officers and nurses.

Mr. LYLE: Does the honourable gentleman realise that the health of the people is dependent on the Government's attitude towards this subject?—Captain GUEST: The War Office fully appreciates that, and is doing all it can.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DOUBLEDAY, F. N., L.R.C.P., M.R.C.S., L.D.S., has been appointed Assistant Dental Surgeon to Guy's Hospital.
JONES, Major-General Sir ROBERT, F.R.C.S., ELMSLIE, Major R. C., F.R.C.S., and TRETOWAN, W. H., F.R.C.S., Honorary Surgeons to the Royal National Orthopaedic Hospital.
MUNDEN, W. F. H., M.D. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Ilminster District of the county of Somerset.
ROWLAND, S. M.B., O.M. Edin., Tuberculosis Officer to the Northampton Corporation.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. P. and Two Asst. S.
Aylesbury, Royal Buckinghamshire Hospital.—H.S.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Birkenhead and Wirral Children's Hospital, Woodchurch road.—H.S.
Brighton, Royal Sussex County Hospital.—Jun. H.S. and Asst. H.S. £280.
Burton-upon-Trent County Borough.—Asst. M.O. £350.
Chesterfield and North Derbyshire Royal Hospital.—Sen. H.S. £300.
Coventry and Warwickshire Hospital.—Res. H.P. £200.
Derbyshire County Council.—Venereal Diseases Officer.
Dorchester, Dorset County Asylum.—Second Asst. M.O. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
Harrogate Infirmary.—H.S.
Herefordshire General Hospital.—Hon. P.'s and Hon. S.'s.
Hospital for Diseases of the Throat, Golden-square, W.—Res. H.S. £100. Also Hon. Anesth. and Hon. Registrar.
Hospital for Sick Children, Great Ormond-street, W.C.—P.
Hull and Sculcoates Dispensary.—M.O.
Johannesburg, South African School of Mines and Technology.—Prof. of Anat. and Prof. of Phys. £1000.
Leicester Corporation Isolation Hospital and Sanatorium.—Two Res. M.O. £350 and £300. Also Female M.O. £240.
Levensham Borough.—Tuberculosis Dispensary M.O. £250.
Liverpool Eye and Ear Infirmary.—Hon. Asst. Surgeons.
Liverpool, Royal Southern Hospital.—Three Res. H.B.'s, Two H.P.'s, and One non-Res. C.O. £109.
Manchester, Anson's Hospital.—Surg. Officer. £3 3s. per session.

Manchester Children's Hospital, Pendlebury, Out-patients' Department, Gartside-street, Manchester.—Asst. M.O. £200.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150.
Merthyr Tydfil Venereal Diseases Clinic.—M.O.
Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—Clin. Assts. and Anesths.
Middlesex Education Committee.—Asst. Sch. M.O. £400.
Middleton-in-Wharfedale Sanatorium, nr. Ilkley.—Asst. Res. M.O. £325.
Mill End Infant Welfare.—M.O.
Mount Vernon Hospital for Consumption and Diseases of the Chest, Northwood, Middlesex.—Asst. Res. M.O. £250.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Res. M.O. £350. Also Anæsthetist. £200. Also Asst. Res. M.O. £250. And other Resident Appointments.
Nottingham Children's Hospital.—Female Res. H.S. and Res. H.P. and Anæsth. £250 and £200 respectively.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Res. M.O. £200.
Reading, Royal Berkshire Hospital.—H.P. £250.
Rousay and Eglishay, Orkney, Parish of.—M.O. £300.
Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.
Royal National Orthopædic Hospital.—Res. H.S. £200. Also Hon. Anæsth. One guinea per attendance.
St. Thomas's Hospital, S.E.—Asst. Bact. £400. Also Asst. Pathologist and Demonstrator of Morbid Anatomy. £250.
Sheffield City Education Committee.—Sch. Dent. S. £350.
Sheffield Royal Hospital.—Two Hon. Asst. P's.
Stannington, Northumberland, Children's Sanatorium.—Female Res. Doctor.
Stockport Infirmary.—Jun. Res. H.S. £200.
Tunbridge Wells General Hospital.—H.S. £160.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Castleberg, Wakefield, Wrotham, Gortin, and Broughton Astley.

Births, Marriages, and Deaths.

BIRTHS.

EDMOND.—On Feb. 15th, at Cruck Meole House, Hanwood, Shropshire, the wife of Major W. S. Edmond, F.R.C.S., R.A.M.C., of a daughter.
LONGBURST.—On Feb. 9th, at Ladbroke-gardens, W., the wife of Lieut.-Colonel B. W. Longhurst, R.A.M.C., of a son.
WIGMORE.—On Feb. 13th, at Bernersmede, Blackheath Park, the wife of Capt. (acting Lieut.-Colonel) J. B. A. Wigmore, R.A.M.C., of a daughter.

MARRIAGES.

DEW-JOHNSTON.—On Feb. 13th, at St. Barnabas, Clapham Common, Major J. Wescott Dew, M.C., R.A.M.C., to Marion Harvey, daughter of the late Mr. and Mrs. Alexander Johnson, of Belfast, Ireland.
GILMOUR-TURNER.—On Feb. 14th, at Westerfield Church, Ipswich, Major John Gilmour, M.C., R.A.M.C., to Marjorie Joyce, only daughter of Mr. and Mrs. Leonard Turner, Spurholt, Ipswich.
MILNE-MACDONALD.—On Feb. 12th, at the Parish Church of Glen-Urquhart, by the Rev. Roderick Mackenzie, Major John Morrison Milne, M.C., R.A.M.C. (T.F.), to Annie Dallas, daughter of the late D. D. Macdonald and Mrs. Macdonald, Divach, Drumadrochit, Inverness-shire.
MOULSON-RYND.—On Feb. 3rd, at Bombay, Captain Geoffrey Moulson, R.A.M.C., to Eileen Helen, daughter of Fleetwood Rynd, late of Mount Armstrong, co. Kildare.
O'BRIEN-DOBBS.—On Feb. 12th, at St. Aloysius Church, Garnethill, Glasgow, Captain Patrick Aloysius O'Brien, R.A.M.C., to Kathleen, daughter of A. H. Dobbs, J.P., Chestnut Hill, Cambuslang.

DEATHS.

AXFORD.—On Feb. 14th, at Bournemouth, William Henry Axford, M.B., in his 80th year.
BENSON.—On Feb. 16th, at Lower Baggot-street, Dublin, of pneumonia, Charles Molyneux Benson, M.D., F.R.C.S.I., aged 41.
BLAKEWAY.—On Feb. 15th, at St. Bartholomew's Hospital, from pneumonia, Harry Blakeway, F.R.C.S., M.S., B.Sc., of Weymouth-street, W., aged 35.
BRAMWELL.—At 10, Heriot Row, Edinburgh, on Feb. 12th, Martha, beloved wife of Byrom Bramwell, M.D., F.R.C.P.E., LL.D.
MORRIS.—On Feb. 14th, at Halesworth, Suffolk, Pryce Jones Langford Morris, M.R.C.S., L.R.C.P., aged 78 years.
SEAL.—Of pneumonia following influenza, on Jan. 10th, at 2, Catherine Villas, Darjeeling, Charles Edward Baldwin Seal, M.R.C.S., L.R.C.P., aged 54, son of the late Charles William and Sarah Morford Snell Seal, of Basingstoke.
TEMPLE.—On Feb. 13th, at Tunbridge Wells, Lieutenant-Colonel William Temple, V.O., M.B., late Army Medical Staff, aged 85.
N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

By an Order of the Food Controller dated Feb. 14th lard may again be used in the manufacture of ointment.

THE WELLCOME RESEARCH LABORATORIES, LONDON.—Mr. F. L. Pyman, D.Sc., having been appointed professor of technological chemistry in the Manchester Municipal College of Technology, Mr. T. A. Henry, D.Sc., late superintendent of the laboratories at the Imperial Institute, London, has taken his place as director of the Wellcome Chemical Research Laboratories.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY, Feb. 27th.—Papers:—Hon. R. J. Strutt: Scattering of Light by Solid Substances.—Sir James Dobbie and Dr. J. J. Fox: The Constitution of Sulphur Vapour.—Dr. W. G. Duffield, Mr. T. H. Burnham, and Mr. A. H. Davis: The Pressure upon the Poles of the Electric Arc (communicated by Prof. O. W. Richardson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
Tuesday, Feb. 25th.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.

Occasional Lecture:
 Sir Almoth Wright: On Lessons of the War in the Field of Immunisation.

Wednesday, Feb. 26th.
SOCIAL EVENING: at 8.30 P.M.

Professor Sir William Osler will discourse on "Sir Thomas Browne and his 'Religio Medici'—a Bio bibliographical Demonstration."

MEETINGS OF SECTIONS.

Monday, Feb. 24th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummary): at 7.30 P.M.

Paper:
 Mr. J. F. Colyer: Irregularities of the Teeth in Monkeys.

Tuesday, Feb. 25th.

MEDICINE (Hon. Secretaries—Charles E. Box, W. Cecil Bosanquet): at 5.30 P.M.

Paper:
 Dr. Otto Leyton: Transfusion in Diseases of the Blood.

Friday, Feb. 28th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—G. E. O. Pritchard, H. C. Cameron, C. P. Lapage): at 4.30 P.M.

Continued Discussion:

The Aetiology, Prevention, and Non-operative Treatment of Adenoids.

Those wishing to take part in the discussion are requested to forward their names to the Senior Hon. Secretary.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Aldies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.

MONDAY, Feb. 24th.—8.30 P.M., Paper:—Mr. R. A. Ramsay: Treatment of Congenital Hypertrophy of the Pylorus.

TUBERCULOSIS SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.

MONDAY, Feb. 24th.—8.30 P.M., Discussion on the Treatment of Tuberculous Glands (opened by Dr. H. de Carle Woodcock).

CHILD-STUDY SOCIETY LONDON, at the Royal Sanitary Institute, 80, Buckingham Palace-road, S.W.

THURSDAY, Feb. 27th.—6 P.M., Lecture:—Dr. P. B. Ballard: The Claim of the Individual Child.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, in the Theatre of the College, Lincoln's Inn Fields, W.C.

MONDAY, Feb. 24th.—5 P.M., Arris and Gale Lecture:—Dr. J. C. Briscoe: The Mechanism of Post Operative Massive Collapse of the Lungs.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Special Eight Weeks' Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Course of Lectures and Demonstrations on Surgical Dyspepsia.

MONDAY, Feb. 24th.—Lecture I:—Mr. A. J. Walton.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.

Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—

WEDNESDAY, Feb. 26th.—5.30 P.M., Lecture IV:—Prof. A. Harden: Scurvy, a Disease due to the Absence of Vitamines.

UNIVERSITY COLLEGE, LONDON, Gower-street, W.C.

FRIDAY, Feb. 28th.—5 P.M., Public Lecture:—Dr. J. Murphy: Italian Methods of Surgical Amputation (illustrated by cinematograph films).

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, Feb. 26th.—4 P.M., Prof. E. W. Hope, O.B.E.: The Role of the Ports in the Protection of the Health of the Nation.

CHADWICK PUBLIC LECTURES, at the Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.

WEDNESDAY, Feb. 26th.—5.15 P.M., Mr. A. Searle: The Use of Colloids in Health and Disease (illustrated by lantern slides).

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

FRIDAY, Feb. 28th.—5.30 P.M., Sir Oliver Lodge: Ether and Matter. Owing to indisposition Prof. J. A. McClelland will be unable to deliver his discourse on "Nuclei and Ions" as announced.

Notes, Short Comments, and Answers to Correspondents.

THE LAWS OF LIFE.

THE second of a series of lectures on Physiology and National Needs was delivered on Feb. 12th at King's College by Dr. M. S. Pembrey, who took for his subject Physical Training of the Open-air Life. Civilisation, he said, was a constant struggle against some of the fundamental physiological laws; life in factories ran counter to these laws, and human happiness and contentment would not be brought about until the physiologist was allowed to deal with the question. That physiology would lead to better results would be shown by a study of man in his primitive state, when physical education was not governed by any departmental care, but was a part of life itself. Under modern conditions we had fallen away from that instinctive training and followed certain regulations not based on physiological truth. We need not however take a pessimistic view of the matter. The idea that man was so badly constructed that he could be improved by the surgeon or the physiologist was not true. The exercises suggested by the Inter-departmental Committee on Model Courses for Physical Exercise were futile, degrading, dull, and without any physiological basis. Young people had the capacity for developing physical fitness if they were given the opportunity; the child developed control over its muscles and used them as a result of learning to crawl and walk, and in the same way learned to play and to coördinate its various physical systems. By progressive work the heart was trained and respiratory exercises carried out—none of them by word of command. He disapproved of the system of training by word of command, as was done in schools; the children covered each other with a spray of saliva droplets, and the authorities became alarmed on account of the spread of infectious disease in the school. The child should be allowed to enjoy itself with ordinary games in the open air. The capacity for development and exercise was present in the germ from the time of conception. We could never abolish disease because disease was a part of life itself. Resistance to disease could only be increased by subjecting children to the presence of the organisms which were common in their country. If this were not done disease would fall upon virgin soil, and an infection which was not so serious in one part of the country would sweep the country like a plague. The child, therefore, should be subjected at an early age to the diseases which they would find present in their environment, and great immunity would probably result, as evidenced during the war, and by the recent epidemic of influenza.

A certain amount of training, Dr. Pembrey went on to say, must take place if man was to remain in perfect health. The oldest key industry was agriculture, and it was noticeable that the agricultural labourer never revolted even when he had good reasons for so doing. He was badly paid and his hours were long, but he rarely worked against the machine. It was the machine that killed the man because it set the pace. The agricultural labourer set the pace himself or it was set by the animals which he employed; all kinds of movements took place which were controlled by conditions of weather, soil, and crops. The conditions of these men were not ideal in every respect, but the men were "good lives" and had supplied some of the best soldiers. Coal-miners furnished excellent "lives"; they did a large amount of muscular work; they set the pace themselves, but their conditions of life were not physiological. In contrasting the coal-miner with the agricultural labourer it was found that the former compensated himself for adverse conditions—and rightly so—by demanding shorter hours. He was fond of sports and games and insisted upon higher wages, for he had to work against adverse conditions and must be well fed. Hard work never killed a man, but the machine did. Directly the machine became so complicated that the man had only to feed it the result was a dull monotony in which beneficial physical exercise was not needed. Muscular work was a physiological necessity; and many men did more work in foot pounds in games and sports than would be done in manual labour. In the muscular exercise of manual labour the same factors were involved as in sports and games, and it was only by taking guidance on these points that we could acquire the necessary conditions of physical fitness. Directly soldiers went out on manoeuvres their sick-rate fell; when they returned to barracks the sick-rate immediately went up; exposure in the open air actually increased their resistance to disease. Factory conditions and open-air work acted in a similar manner.

The best condemnation of the set exercise Dr. Pembrey found in its use in school as a punishment. In nearly all

games there was an unconscious education of the nervous system. The digestive system could be developed by muscular work, and combustion and utilisation of food material could be in this way increased, but under modern conditions of work it was easily upset, ill-temper being the result. The cutaneous system was constantly neglected. Physiological and not conventional cleanliness was the thing most needed for body and mind, but this could only be obtained when the components of the skin were working in the proper way, such as occurred if exercise were pushed to sweating. That babies had lost their natural instincts for remaining physically fit was not true, but there was a constant struggle with the child to make him conform to civilised life. Sterilised milk was supposed to enable him to ward off disease, but after sucking from the bottle he was generally put on the floor; he then wetted his fingers in his mouth, brushed up the germs from the floor and afterwards swallowed them. Resistance to disease was the thing to aim at. Tooth-brush drill in the schools not only produced retraction of the gums but transferred germs from one child to another.

Professor E. H. Starling, who presided, said that there could be no doubt as to the advantages of open-air exercise over the artificial method. The greater longevity of the typical Englishman as compared with almost any other race was due to the fact that he loved sports. Open-air exercise for the child would mean that he must have more food. Lack of development was not altogether due to bad conditions, for it must be remembered that we kept our weaklings alive.

THE TREATMENT OF ADENOIDS.

To the Editor of THE LANCET.

SIR,—In reply to the inquiry of "M.D." as to the treatment of adenoids, the methods advocated by Dr. Ormiston are being carried out at the Roll of Honour Hospital at 638, Harrow-road on Tuesdays and Thursdays, 9.30–11.30 A.M. Demonstrations are also held at 60, Greek-street, Soho, on Fridays, 4–6 P.M., in connexion with work done by the Westminster Health Society.

I am, Sir, yours faithfully,
OCTAVIA LEWIN, M.B., B.S.

Wimpole-street, W., Feb. 18th, 1919.

MANCHESTER AND DISTRICT RADIUM INSTITUTE.

THE report of the work of this institution for the year 1918 is an interesting and useful document, for it not only gives an account of the valuable results accomplished during the year, but also the uses to which radium has been put during four years' employment at the Institute, together with an indication of the types and classes of diseases in which it has been found useful as a curative or palliative agent. This last section of the report is illustrated with pictures, showing the effect of radium in cases of rodent ulcer, periosteal sarcoma, spring catarrh as affecting the eyeball, carcinoma of the breast, and epithelioma of the lip. Between the first day of January and the last day of December, 1918, 643 patients presented themselves for treatment, an increase of 60 patients over the previous year. Forty-eight cases of malignant disease, exclusive of rodent ulcer, were rendered free from symptoms and signs. This represents 11.75 per cent. of the cancerous cases treated, an improvement of over 2 per cent. over the year 1917. The best results were obtained in carcinoma of the cervix of the uterus. Apparently, also, 18 cases of rodent ulcer were cured, representing nearly half of the total treated. In addition 26 non-malignant conditions were cured. No cures of exophthalmic goitre are reported, but a large number of the patients treated were so much improved that they were able to resume their normal occupations. In this connexion it is interesting to notice that a careful record was kept during the year as to the effects of exophthalmic goitre on the menstrual functions. It was found that 14 per cent. of the patients suffered from excessive haemorrhage, 35 per cent. were quite normal, and 51 per cent. suffered from periods of amenorrhoea. The number of emanation plates used was 365, and of emanation tubes 968, making a total of 1333. The number of patients demanding treatment steadily increases, and the need for better accommodation is pointed out.

At present the Institute is located at the Manchester Royal Infirmary, in underground rooms and under very inefficient conditions. Considering the character of many of the growths treated hygienic conditions ought to be of the best, in the interests both of worker and patient. As the report says:—

"With the steady increase in the work of the Radium Institute and the tendency to change its aspect from purely experimental effort into an essential part of the medical organisation of Manchester, it now seems to be a suitable time to raise the question of the nature of the premises occupied by the Institute, and the necessity for providing special beds for the treatment of its cases."

All users of radium as a curative agent will find the report of much utility.

INFANT'S TENACITY OF LIFE.

THE following account is given by the mother of the infant, a girl aged 16 years, and is one of two documents supplied by the sub-inspector of police in the district in which the occurrence took place:—

Translation of Statement made by Musammat Oocht, Wife of Ramloo Dhangar, aged 16 years.

I had left my husband's house and returned to my parents for my confinement. I began to have great pain, and for seven days suffered agony. Fever was very bad in the village, and most people had left it, so there was no dayee (nurse) or anyone to help me.

After I had suffered for seven days and nights I could stand the pain of existence no more, so without disturbing anyone I got up and went to a small well at the end of the compound and, holding the wall at the edge of the well, let myself down, and then let go. I fell straight into the water and sank deep; then slowly rose to the surface and sank again. As I was sinking the second time my child was born, and I snatched it to my body and rose to the surface again. The walls were all within reach and I managed to catch hold of a projecting stone, and held myself up with the child pressed against me with my other hand. I did not call for help, but very shortly after this my father came and looked into the well and called, and I answered. Then he let down a basket and I put the child in and he pulled it up. Then he let the basket down again and I got in and he pulled me up. This all occurred at about 3 A.M.

The report from the sub-inspector to the Deputy-General of Police bears out the statement of the mother. It is said that the woman and child died about a week or ten days later, probably from influenza. In this case labour seems to have been hastened by the shock of falling into the well and commencing asphyxiation. The incident is probably unique and is of some medico-legal importance.

BOOKS OF REFERENCE.

BOTH the *New Hazell Annual and Almanack* (London: Henry Frowde and Hodder & Stoughton. Pp. 997. Price 6s.) and *Whitaker's Almanack* (London: Whitaker. Pp. 1005. Price 6s.) appear late this year owing to the many difficulties of publishing due to the war conditions. Delay has also been caused by the desire of the compilers to include in their respective editions a complete result of the Parliamentary elections. The contents of these two reference books for the office, the library, and the public generally are so well known that it is unnecessary to describe them at the present date, but it may be mentioned that in *Hazell* will be found a short medical review of the year 1918, including the progress towards a Ministry of Health and the history of the influenza epidemic and the efforts made to combat it. *Whitaker* as well as *Hazell* devote considerable space to the war and matters connected therewith, and while necessarily there is some overlapping, the publications supplement each other both in this and other subjects. The delay in publication has enabled the editors to bring information up to date.

COLONIAL HEALTH REPORTS.

Zanzibar.—Mr. R. H. Crofton, acting Chief Secretary to the Government, in his report for 1917, states that at the last Census the population of the island of Zanzibar was 113,624 (42,991 adult males, 49,210 adult females, and 21,423 children), and that of Pemba 83,109 (28,463 adult males, 31,894 females, and 22,752 children), the density of population being 175 per square mile in Zanzibar and 219 in Pemba. The population of the town of Zanzibar was 34,822. The birth-rate (births registered) for the year was 21.0, as against 19.08 per 1000 in 1916. (The death-rate, presumably by inadvertence, is not specified in the report.) Measures are being taken to ensure more accurate registration of births, and it is considered probable, when the registration of all births is secured, that it will be found that the births equal, or even exceed, the deaths, contrary to opinions based on the figures now available. The islands were free from any severe epidemic of disease during the year, and the general health of the community was fair. Twenty-three cases of cerebro-spinal meningitis were notified during the year. Of these, 15 occurred among the King's African Rifles recruits from the mainland. All the cases reported died with the exception of 2 remaining under treatment at the infectious diseases hospital on Dec. 31st. Eleven deaths were certified as due to dysentery; 5 of these gave a history of having recently arrived from German East Africa. There were 31 deaths from malaria, 4 from blackwater fever, and 41 from tuberculosis. Seven cases of small-pox occurred (all imported from Bombay), of which two died. There was no case of plague. The systematic collection of rats in the town was carried on as in past years; 13,647 were examined microscopically with negative results. During the year 504 cases, principally sick and wounded officers and men of His Majesty's naval and military forces, were treated at the European hospital. In the native hospital 1038 in-patients and 7475 out-patients were treated. Thirty-five in-patients and 2406 out-patients were dealt with in the dispensary at Mkokotoni. In the infectious diseases hospital at Gulioni, 126 patients and 85 contacts were admitted during the year and there were 17 deaths. There is one Government hospital in Pemba, at Chake Chake, and

dispensaries at Mkoani and Weti; 378 in-patients and 7260 out-patients in all were treated in these establishments. The number of lepers in the two islands amounts probably to about 450, of whom 107 are segregated in one settlement in Zanzibar (which is subsidised by the Government and administered by the Roman Catholic Mission under the supervision of the medical officer of health) and 177 in three settlements in Pemba, while the remainder are at large. There is a poor-house in Zanzibar which is practically a home for the incurable. The number of patients at the beginning of 1917 was 55, the number admitted during the year 99, the number of discharged 28, and the number who died 64. The large roll of deaths is accounted for by the fact that the institution takes in many cases in the last stages of disease.

H. W. C.—The X ray tubes in question were of German make and are now unobtainable. Messrs. Cosserand and Andrews make tubes for therapeutic purposes. A 6 in. Macalister-Wiggin tube, seasoned by frequent running for fairly long periods with as large a current as it will bear without becoming too hot to hold in the hand at any part, takes at first a current as small as 0.4 to 0.5 ma., but sooner or later it becomes more tolerant, and when it will easily carry 1 ma. for 15 minutes it will have a resistance equal to about a 4½ in. spark-gap in air. Such a tube, in spite of the increased distance necessitated by its size, will frequently turn a Sabouraud pastille in eight minutes. As the tube gets older this time may be shortened by using an increased current, but this is not advisable except in cases where a single dose is required; in a ringworm case the tube would probably become overheated before the usual five doses had been given. The preparation or "seasoning" is troublesome, but once secured the tube is well adapted for therapeutic work, and if used with care and discretion has a surprisingly long and useful life. In a busy clinic two or more are necessary so as not to put any one of them to the strain of continuous service.

BOOKS, ETC., RECEIVED.

- BLACKWELL, Mr., Broad-street, Oxford. LONGMANS, GREEN AND CO., New York.
Wheeler, 1918. Third Cycle. Edited by Edith Sitwell. 4s. 6d.
CHAPMAN AND HALL, London, and J. WILEY, New York.
Pharmacy, Theoretical and Practical, including Arithmetic of Pharmacy. By E. A. Ruddiman, M.D. 2s. 6d.
Examination of Milk for Public Health Purposes. By J. Race, F.I.C. 8s. 6d.
FORSTER, GROOM AND CO., London.
The Whole Duty of the Regimental Medical Officer. By Captain P. Wood, R.A.M.C. 2s. 6d.
LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.
A Text-book of Chemistry. By S. F. Sadtler, Ph.D., and Others. 5th ed. 21s.

Communications, Letters, &c., to the Editor have been received from—

- A.—Dr. H. G. Adamson, Lond.
B.—Dr. W. L. Brown, Lond.; Miss L. Brown, Wigan; Mr. E. J. Bean, Lond.; Mr. E. J. Burdon, Lond.; Dr. G. S. Buchanan, Lond.; Dr. H. Barber, C.B.Y.; Dr. P. Bousfield, Lond.; Surg.-Com. P. H. Boyden, R.N.; Dr. A. E. Boycott, Radlett.
C.—Messrs. Chamberlain, Donner, and Co., Manchester; Mr. H. Cooper, Lond.; Christian Science Committee on Publication Lond.; Chicago School of Sanitary Instruction; Chadwick Trust, Lond.; Sec. of; Central Council for District Nursing in London; Mr. F. V. Conolly, Lond.
D.—Dr. W. H. Dickinson, Newcastle-upon-Tyne.
F.—Dr. S. B. Figgis, Brighton; Factories, Chief Inspector of, Lond.; Major E. R. Fothergill, R.A.M.C.
G.—Dr. W. Gordon, Exeter; Dr. H. J. Gauvain, Alton; Major S. B. Gray, M.C., U.S.A.; Dr. A. K. Gordon, Lond.
H.—Mr. C. J. Heath, Lond.; Prof. W. Hall, Lond.; Dr. L. Hirschfeld; Lt.-Col. L. W. Harrison, D.S.O., R.A.M.C.; Mrs. E. Handcock, Lond.; Dr. F. Herniman-Johnson, Lond.
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K.—Dr. E. C. Kidd, Bromsgrove.
L.—Dr. O. E. Lakin, Lond.; Miss E. Lowry, M.B., Lond.; London Dermatological Society; Mr. D. Ligat, Lond.; Mr. K. A. Lees, Lond.; Mr. J. B. Lamb, Lond.; Local Government Board, Lond.; Major J. H. Lloyd, R.A.M.C.(T.); Miss O. Lewin, M.B.; Dr. C. Lundie, Glasgow; Prof. H. Littlejohn, Lond.
M.—Dr. R. Morton, Lond.; Mr. A. B. Melville, Edinburgh; Mr. J. B. Macalpine, Aberdovey; Medical Research Committee, Lond.; Dr. H. J. May, Southampton; Dr. N. Moore, Lond.
N.—National Provident Institution, Lond.; Actuary and Secretary of; National Food Reform Association, Lond.
O.—Mr. H. Oppenheimer, Lond.; Mrs. K. O'Connor, Ware.
R.—Capt. J. Ryle, R.A.M.C.(S.R.); Royal Statistical Society, Lond.; Royal Society, Lond.; Royal Institution of Great Britain, Lond.; Capt. C. H. L. Rixon, R.A.M.C.; Royal Society of Arts, Lond.
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Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

An Analysis

OF

CASES OF TETANUS

OCCURRING IN THE BRITISH ARMIES IN FRANCE
BETWEEN NOV. 1ST, 1916, AND DEC. 31ST, 1917.By S. L. CUMMINS, C.M.G., M.D., LL.D.N.U.I.,
COLONEL, A.M.S.;

AND

H. GRAEME GIBSON, M.R.C.S., L.R.C.P. LOND.,
MAJOR, R.A.M.C.

THE present analysis is a continuation of that published by Colonel Sir William Leishman and Major A. B. Smallman.¹ All the information at our disposal has been collected under the direction and supervision of Sir William Leishman himself and would have been dealt with by him in due course but for his transfer to the War Office. In arranging the material handed to us by him we propose to adhere closely to his methods of tabulation and to allow the tables and charts, as far as possible, to speak for themselves. Such an analysis would, however, lose much of its interest and value if it were to consist merely in the setting forth of the information in tabular form without any attempt, on the part of the authors, to formulate the impressions which they have gained in their examination of the material available. We shall therefore venture to draw such conclusions as we consider to be justified; at the same time expressing our regret that circumstances have made it impossible for Sir William Leishman himself to deal with the facts collected under his direction and in the arrangement of which his great experience and knowledge have been invaluable.

CASE INCIDENCE.

The records at our disposal cover the period from Nov. 1st, 1916, to Dec. 31st, 1917, and deal with a total of 376 cases. During this period complete figures for tetanus cases among the British battle casualties are available and the case-incidence per 1000 shows a moderately steady decrease. The "total wounded" on which Chart I. is founded does not include "wounded (gas)." The rainfall, though following to a certain extent the minor fluctuations, does not appear to bear any definite relation to the case-incidence, which is actually lower during the wettest months of the period under observation. Temperature, however, may perhaps have some effect, as the ground tends to dry up more rapidly in the summer and early autumn. On the whole, Chart I. shows a satisfactory fall in the case-incidence of tetanus during the summer and autumn of 1917.

CASE MORTALITY.

Of the 376 cases dealt with, 252 died and 124 recovered, a case mortality of 67.0 per cent. Of the total deaths, 13 were from causes other than tetanus. As, however, it is impossible to evaluate successfully the relative importance of the factors leading to death in cases that have just passed through an attack of tetanus, we have thought it better to include these deaths in the total mortality.

Table I. gives the case mortality of the present series and of the two previous analyses of tetanus cases in the British Expeditionary Force. It is satisfactory to be able to record a continued improvement in this respect.

The 376 cases of the present series fall into four groups: (a) Cases among British battle casualties, 291; (b) cases

TABLE I.—Case Mortality of Present Series Compared with that of Former Series in the B.E.F.

| | No. of cases. | Died. | Recovered. | Case-mortality. |
|-----------------------|---------------|-------|------------|-----------------|
| July, 1915... | 179 | 140 | 39 | 78.2% |
| July–October, 1916... | 160 | 118 | 42 | 73.7% |
| Present series... | 376 | 252 | 124 | 67.0% |

TABLE I.A.—Distribution of Cases of Tetanus, together with the Case Mortality in Each Group.

| | | | | |
|-------------------------------|-----|-----|-----|-------|
| (a) British battle casualties | 291 | 191 | 100 | 65.6% |
| (b) "Trench feet"... | 24 | 21 | 3 | 87.5% |
| (c) Accidental... | 48 | 26 | 22 | 54.1% |
| (d) German prisoners... | 13 | 9 | 4 | 69.2% |

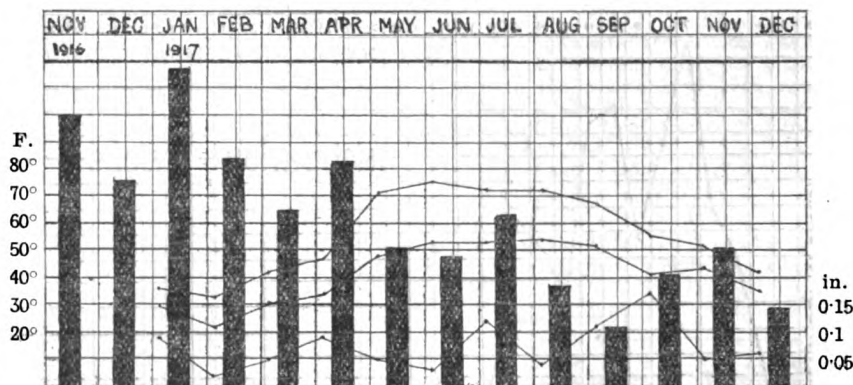
TABLE I.B.—Case Mortality of Present Series of Cases when Grouped in Chronological Order.

| | | | | |
|--------------|----|----|----|-------|
| 1st group... | 63 | 47 | 16 | 74.5% |
| 2nd " | 63 | 48 | 15 | 76.1% |
| 3rd " | 63 | 45 | 18 | 71.4% |
| 4th " | 63 | 40 | 23 | 63.4% |
| 5th " | 63 | 36 | 27 | 57.1% |
| 6th " | 61 | 36 | 25 | 59.0% |

among men suffering from "trench feet," 24; (c) cases due to accidents and other causes, 48; (d) cases among German prisoners of war, 13. Each of these groups has its own rate of case mortality, as shown in Table I. A.

In the previous analysis the case mortality for the period July–October, 1916, was 73.7 per cent. If the whole of the 376 cases, taken in chronological order, are divided into six groups—five groups of 63 and the sixth group of 61—and the case mortality of each group is examined separately, a fairly steady fall will be noted. (Table I. B.)

CHART I.—Ratio of Case-incidence to Battle Casualties over Period Nov., 1916, to Dec., 1917.



The bottom curve indicates average daily rainfall per month in decimals of an inch. The upper curves show the average maximum and minimum temperature.

POSITION OF WOUNDS WITH REFERENCE TO CASE MORTALITY.

The following figures show the relative frequency of body and limb wounds in cases of tetanus in this series of cases and in the series July–October, 1916. Where wounds of the body and limbs occur in the same case it has been counted as a case of body wound only. The increase in the

TABLE II.—Ratio between the Number of Cases suffering from Wounds of the Limbs and Body.

| Series. | Body. | Limbs. |
|----------------------------------|-------------|-------------|
| July–October, 1916: 157 cases... | 79. 50.3 % | 78. 49.7 % |
| Present series: 371 "... | 144. 38.8 % | 227. 61.1 % |

TABLE II.A.—The Position of the Wounds in Reference to Case Mortality.

| | | |
|----------------------|-------------|-------------|
| Fatal cases: 251 ... | 102. 40.6 % | 149. 59.3 % |
| Recoveries: 120 ... | 42. 35.0 % | 78. 65.0 % |

* Definite information was obtainable on these points in 371 cases.

¹ THE LANCET, Jan. 27th, 1917; Journal of Royal Army Medical Corps, March, 1917.
No. 4983

percentage of wounds of the limb is exaggerated, to a certain degree, by the inclusion of more cases of tetanus from "trench feet" in this series.

Table II.A shows the relative incidence of body to limb wounds in the fatal cases and those which recovered. Very little can be deduced from these figures, a slightly lower percentage of body wounds, however, being recorded amongst the recovered cases than in the previous analysis.

The relative frequency of sepsis, gas gangrene, the extent and the multiplicity of wounds amongst the tetanus cases under consideration is shown in Tables III. and III.A. A comparison has also been worked out between the frequency of these conditions in cases in the present series and

among cases in the last analysis. The two series correspond in a striking degree with the exception that gas gangrene has dropped to 19.9 per cent. in the later series.

With regard to the effect of these factors on the case mortality, we consider that it would be dangerous to draw conclusions. Each of the headings necessarily includes many cases common to the others, and the relative influence of each factor is obscure. The extent and severity of the original wound naturally plays a predominant part.

INCUBATION PERIOD.

Records of the incubation period are available in 343 out of the 376 cases. The time between wounding and the onset

CHART II.

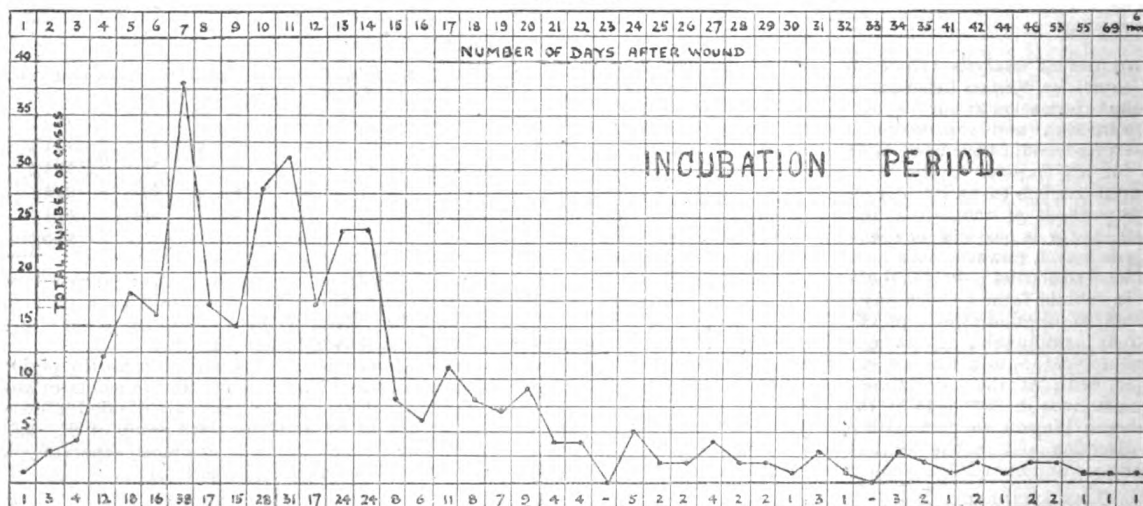


CHART III.

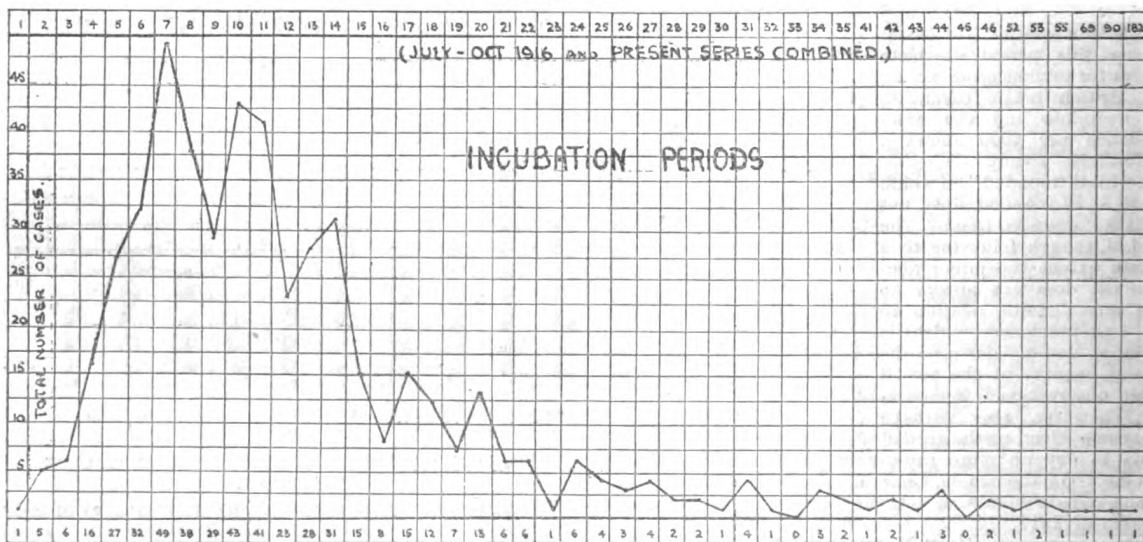


TABLE III.—Condition of Wounds as regards Sepsis, Gas Gangrene, &c.

| | Severe sepsis. | Gas gangrene. | Extensive or severe wound. | Multiple wounds. |
|-----------------------------------|----------------|---------------|----------------------------|------------------|
| July-October, 1916: 155 cases ... | 112. 72.2% | 66. 42.5% | 124. 80.0% | 80. 51.6% |
| Present series: 371 cases ... | 278. 74.9% | 74. 19.9% | 293. 78.9% | 190. 51.2% |

TABLE III.A.—Condition of Wounds in Reference to Case Mortality.

| | Severe sepsis. | Gas gangrene. | Extensive or severe wound. | Multiple wounds. |
|----------------------|----------------|---------------|----------------------------|------------------|
| Fatal cases, 251 ... | 194. 77.2% | 56. 22.3% | 205. 81.6% | 131. 52.1% |
| Recoveries, 120 ... | 84. 70.0% | 18. 15.0% | 88. 73.3% | 59. 49.1% |

of tetanic symptoms varied from 18 hours—a case of a gunshot wound of the right thigh with fracture of the femur in which no history of any previous injury could be elicited—to 180 days. This latter case has been eliminated for the purpose of working out the average incubation period, which, for 342 cases, was 13.2 days, a little over one day longer than in the previous analysis. Of the fatal cases, 230 in number, the average period was 12.5 days compared with 10.7 in the July-October analysis, and of the 112 recoveries 14.9 as compared with 14.0 days. The difference in the incubation period of fatal cases and recoveries is 2.5 as compared with a fraction over 3 days in the last analysis and 2.75 days in the analysis of July, 1915.

A curve of the incubation periods by days is attached (Chart II.). The peak of the curve is a day earlier than in

the previous analysis, being reached on the seventh day instead of on the eighth.

A combined curve of the present and previous series is also appended (Chart III.).

Table IV. shows the case mortality for varying incubation periods from 10 days and under to 22 days and over. Of

TABLE IV.—Incubation Period per Cent. of Cases.

| Analysis. | 10 days and under | 11-21 days. | 22 days and over. |
|---------------------------------------|-------------------|-------------|-------------------|
| July-October, 1916 | 53.8° | 31.8° | 8.2° |
| Present series | 44.1° | 43.3° | 12.2° |
| Combined | 49.2° | 39.8° | 11.0° |
| Home cases, Dec. 1916, to March, 1917 | 10.0° | 21.0° | 69.0°† |

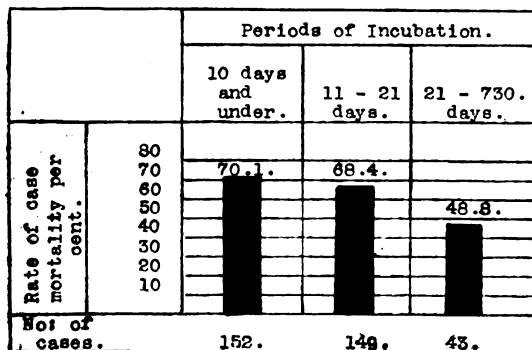
* = 11 to 22 days.

† = Over 22 days.

the present series of cases 44.1 per cent. had an incubation period of 10 days or less, 43.3 per cent. of between 11 and 21 days, and 12.2 per cent. of 22 days and over. When divided in this way the present figures show a lengthening of the incubation period as compared to those of July-October, 1916.

The close connexion between the length of the incubation period and the case mortality is shown graphically in Chart IV. This connexion should not be lost sight of in

CHART IV.—The Relation between Incubation Period and Case Mortality



comparing the results of treatment in cases occurring in England with those in France.

INFLUENCE OF OPERATION BEFORE ONSET OF TETANUS.

Tetanus occurred after amputation affecting the upper or lower limbs in 59 cases, or in 15 per cent. of all the cases in the series. Of these 59 cases, 38 died as a result of tetanus and 15 recovered, while 6 died from sepsis and other causes after the tetanic symptoms had subsided. Among the 59 cases 42, or 71.1 per cent. occurred after amputation of the lower limb, and 16, or 27.1 per cent., after amputation of the upper limbs, while in one case both an upper and a lower limb had been amputated. Among the cases of amputation of the lower limbs in which tetanus subsequently developed the case mortality was 76.3 per cent.; in the case of the upper limbs 60.0 per cent. The one patient in whom both an upper and lower limb were amputated recovered from his tetanic symptoms, but died from bronchial pneumonia 30 days later.

INFLUENCE OF OPERATION AFTER ONSET OF TETANUS.

Operative interference was resorted to after the appearance of tetanic symptoms in 27 cases or 7.1 per cent. of the total number of cases. Of these 22 died and 5 recovered, giving a case mortality of 81.48 per cent. This is an even higher case mortality than in the last analysis, where 7 died out of a total of 9 cases, a case mortality of 77.7 per cent. Table IV.A gives the nature of the operations performed, the period between the onset of tetanic symptoms and the operation, and the result.

THE PROPHYLACTIC USE OF TETANUS ANTITOXIN.

It is a matter of great interest that nearly one-fifth of the total number of cases arising in the period under review occurred amongst persons to whom no inoculation had been given. These were chiefly patients suffering from trench

TABLE IV.A.—Operative Interference After Appearance of Tetanus.

| Series No. | Date of onset. | Date of operation | Result. | Nature of operation. |
|------------|----------------|-------------------|---------|--|
| N. 2 | Nov. 3, 1916. | Nov. 3. | D. | Amp. middle of left calf. |
| N. 18 | " 15. " | " 15. | D. | Opening up wound. |
| N. 23 | " 20. " | " 21. | D. | Excision of wound, drainage. |
| N. 32 | " 16. " | " 17. | R. | Amputation left forearm. |
| D. 1 | Dec. 5. " | Dec. 5. | D. | Sloughing area excised. |
| D. 12 | " 20. " | " 20. | D. | Amputation finger. |
| D. 21 | " 25. " | " 25. | D. | Sloughing area excised. |
| 14 | Jan. 8, 1917. | Jan. 11. | R. | Neck drained, F.B. removed. |
| 13 | Feb. 10. " | Feb. 10. | D. | Amputation thigh. |
| 23 | Mar. 3. " | Mar. 3. | D. | Free exposure of wound. |
| 47 | " 20. " | " 20. | R. | Abscess opened. |
| 49 | " 30. " | " 31. | D. | Nail removed. |
| 63 | April 16. " | April 17. | D. | Wound incised and drained. |
| 128 | " 12. " | " 12. | R. | Excision of wound. |
| 86 | May 3. " | May 5. | D. | F.B. removed. |
| 88 | " 7. " | " 9. | D. | Wounds opened. |
| 110 | " 20. " | " 20. | D. | F.B. removed. |
| 112 | " 19. " | " 19. | D. | Abscess opened. |
| 156 | " 18. " | " 19. | D. | G.S.W. shoulder. Arm moved under anæsthetic. |
| 204 | July 16. " | July 24. | R.* | Fragment of tibia removed. Wound sutured. |
| 206 | Aug. 24. " | Aug. 28. | D. | Extensive incisions. |
| 226 | Oct. 5. " | Oct. 6. | D. | Wound excised. |
| 239 | " 17. " | " 20. | D. | For secondary hæmorrhage. |
| 241 | " 22. " | " 24. | D. | " " |
| 251 | " 24. " | 5½ hrs. later. | D. | Amputation right leg. |
| 277 | Aug. 7. " | Few hrs later. | D. | " finger. |
| 283 | Nov. 29. " | Nov. 30. | D. | " left leg. |

* Tetanic symptoms ceased 4/8/17.

foot or cases of accidental injury. In December, 1916, an order was sent out from the office of the Director-General Medical Services, that prophylactic inoculation was to be given in all cases of trench foot, and this order became of general application from the beginning of 1917 onwards. It may be added that of the 14 cases arising amongst uninoculated patients suffering from trench foot between November, 1916, and Dec. 31st, 1917, no less than 13 occurred before the issue of the order above referred to.

Influence of Early Administration of the Prophylactic Dose.

It is not possible to ascertain the proportion of all wounded who received a prophylactic inoculation within 24 hours of wounding, nor the total number to whom the

TABLE V.—Influence of Early or Late Prophylactic Dose on Case Mortality.

| Prophylactic dose. | No. of cases. | Died. | Recovered. | Case mortality. |
|---|---------------|-------|------------|-----------------|
| Within 24 hours of wound | 226 | 143 | 83 | 63.2° |
| More than 24 hours after wounding | 46 | 33 | 13 | 71.7° |

TABLE V.A.—Amount of Initial Dose and Case Mortality.*

| | | | | |
|------------------------------|-----|-----|----|-------|
| No prophylactic dose | 70 | 48 | 22 | 68.5° |
| 500 units | 161 | 109 | 52 | 67.6° |
| 750-1000 units | 52 | 27 | 25 | 51.9° |
| 1001-1500 units | 13 | 6 | 7 | 46.1° |

TABLE V.B.—Case Mortality in Cases Receiving only One Prophylactic Dose.*

| | | | | |
|-------------------------|-----|----|----|-------|
| 500 units | 119 | 90 | 29 | 75.7° |
| 750-1000 units | 27 | 12 | 15 | 44.5° |
| 1000-1500 units | 12 | 5 | 7 | 41.7° |

* In cases receiving this prophylactic dose within 24 hours.

inoculation was given at a later period. The case incidence in these two groups cannot, therefore, be estimated. From the figures at our disposal we are able to compare the case mortality in those receiving the early inoculation with those

in which this was not given until later than 24 hours and the results are set forth in Table V. It will be seen that the results, as far as they go, point to a decidedly lower case mortality in those receiving the earlier dose.

Size of Prophylactic Dose.

During the whole of the period covered by the previous analysis and up to July, 1917, or the first eight months of the period included in the series now under examination, the prophylactic dose had been, in practically all cases, 500 antitoxic units, and this dose undoubtedly gave very satisfactory results.

When the production of antitetanic serum had been placed on such a footing as to ensure a constant and adequate supply the question naturally arose as to whether a more liberal dose might not be still more efficacious in cases of gross contamination of the wound. In July, 1917, an instruction was circulated to all concerned from the Office of the Director-General, Medical Services, recommending that a dose of 1000 to 1500 units should be given "in all deep wounds, in those which are contaminated by dirt, and in those in which there is a fracture of bone." This period onward in the series marks not only the lowest ratio of tetanus cases to battle casualties, but shows also a considerable fall in the case mortality of this disease.

In view of the Director-General's circular above referred to, it may be assumed that a considerable number of cases have received the larger doses therein recommended, yet the number of tetanus cases recorded as arising amongst persons to whom the larger dose had been given is very small. This appears to suggest that the increased dose is proving effective in reducing case-incidence; but, again, statistical information is not available to render possible a reliable comparison between the case-incidence in groups of wounded to whom different prophylactic doses had been given.

Failing such statistical information, an indication was once more sought in the mortality in groups of cases occurring after different doses, and the results are shown in Table V.A. In this table only those cases in which the first dose had been given within 24 hours are included, as the varying interval between infection and the prophylactic doses given at later periods bring in large possibilities of error. It will be seen that the mortality was highest amongst those in which no prophylactic dose had been given, and that it fell steadily as the dose increased.

In order still further to diminish factors of error, it was decided to exclude those cases which had received a second prophylactic dose before the onset of symptoms. Table V.B. deals with those cases in which only a single prophylactic dose had been given within 24 hours of wounding. Although the figures, especially those referring to the larger doses, are too small to justify final conclusions, the information so far available tends to point towards a favourable influence of the larger prophylactic dose on the case mortality where tetanus subsequently develops.

THE THERAPEUTIC USE OF TETANUS ANTITOXIN.

Of the 376 cases in the present series, all but four, each of them fatal, were treated with antitoxin, so the tables now to be discussed deal with 372 cases. We have arranged our material in Tables VI. to XVI., which correspond to, and should be compared with, Tables VI. to XVI. of the previous analysis. As in the previous tables, we employ the letter T to signify the intrathecal method; V the intravenous; S the subcutaneous; and M the intramuscular.

In comparing Table VI. with the corresponding table of the previous analysis it will be seen that there has been a tendency to give larger doses, 195 (or 52 per cent.) receiving upwards of 20,000 units, as compared with 41 (or 26 per cent.) in the former series. It will be observed that the case mortality of the whole series is 66 per cent., a figure which compares favourably with 73.7 per cent. in the previous analysis.

In Tables VII. to XI. we have followed the method of tabulation adopted by Sir William Leishman and Major Smallman, and for the purpose of facilitating comparison we have reproduced their figures along with ours. Table VII. shows the total number of cases treated by serum (with or without non-specific treatment), together with the number of deaths and the case mortality per cent. The table also shows the number of cases treated by any one of the four available routes alone or in combination with one or more of the three other routes. Tables VIII. to XI. show all cases treated by the intrathecal, intravenous, subcutaneous, and intramuscular routes, either alone or in combination with one or more of the other routes.

It will be seen in Table VII. that the analysis of a larger number of cases leads to results corresponding closely with the previous figures. On the whole, however, the difference between the results of treatment by the several routes tend to be less marked. Extreme variations from the mean are only seen in those groups where the total numbers are small. For instance, the intravenous route still shows a mortality of 100 per cent., but this figure is based on a total of four cases only.

In Tables VIII. to XI. a noticeable feature is the same tendency to "levelling up" observed in Table VII. It would seem that the larger the number of cases available for comparison the smaller tend to be the differences between the combinations of the various methods of injection of antitetanic serum. In Table VIII., for instance, the mortality for the T.S.M. combination, formerly 25 per cent., is 58.5 per cent. for the new series. It is to be noted that the total mortality for all the administrations in which the intrathecal route is included falls from 75 per cent. to 68.2 per cent., a figure not strikingly different from the 66.6 per cent. mortality in the whole series of cases treated with serum. The mortality in the cases treated by the intravenous route and its combinations (Table IX.) falls in the new series to 78.9 per cent., a very small difference which perhaps merely emphasises the resemblance to previous records. This result is, however, based on such a small number of cases that no very definite inference can be drawn. The deaths following the administration of serum by the subcutaneous route alone rise from 55 per cent. in the previous series to 78.2 per cent. in the cases now under consideration, while the mortality following the intramuscular route alone moves in the opposite direction, falling from 75 to 55 per cent.

It is possible that the rather high mortality still recorded after the use of the intrathecal route alone is to be attributed rather to the selection of this channel in desperate cases, with a view to giving a last chance to the patient, than to any inefficiency connected with this route. It may prove, however, that the high mortality associated with the intravenous route is significant, although based on small figures, and it should be mentioned that the only two fatal cases of anaphylaxis in the series occurred where this route, among others, was employed. If the figures of the previous series be added to those of the present it will be seen (Table IX.)

TABLE VI.—Showing the Total Number of Cases Treated by Serum.

The cases are grouped according to the total dosage, together with the case mortality. The groups are subdivided to show how many cases fall into each one of the 15 possible combinations.

| Dose (in units). | No. of cases. | Died. | Case mortality | Methods of administration. | | | | | | | | | | | | | | |
|--------------------|---------------|-------|----------------|----------------------------|----|----|----|------|------|------|------|------|------|--------|--------|--------|--------|----------|
| | | | | T. | V. | S. | M. | T.V. | T.S. | T.M. | V.S. | V.M. | S.M. | T.V.S. | T.V.M. | T.S.M. | V.S.M. | T.V.S.M. |
| 1,001- 5,000 ... | 32 | 30 | 93.7% | 10 | 1 | 10 | 6 | — | 1 | 3 | — | — | 1 | — | — | — | — | — |
| 5,001- 10,000 ... | 62 | 40 | 76.9% | 5 | — | — | 8 | 2 | 14 | 14 | — | 1 | 3 | — | 2 | 3 | — | — |
| 10,001- 20,000 ... | 93 | 74 | 79.5% | 6 | 1 | 5 | 17 | 3 | 8 | 23 | 1 | 2 | 7 | 4 | 4 | 12 | — | — |
| 20,001- 50,000 ... | 113 | 67 | 59.2% | 4 | 1 | 4 | 18 | 3 | 11 | 31 | 4 | — | 11 | 1 | 6 | 16 | — | 3 |
| 50,001-100,000 ... | 52 | 25 | 48.0% | — | 1 | 4 | 6 | 1 | 2 | 16 | — | 1 | 3 | 2 | 6 | 6 | — | 4 |
| Above 100,000 ... | 30 | 12 | 40.0% | — | — | — | 5 | — | 1 | 15 | — | — | 2 | 1 | 2 | 4 | — | — |
| Totals ... | 372 | 248 | 66.6% | 25 | 4 | 23 | 60 | 9 | 37 | 102 | 5 | 4 | 27 | 8 | 20 | 41 | — | 7 |

Four cases received no serum treatment; all died—100% case mortality.

that of 112 cases treated by the intravenous group and its combinations 89 died, representing a case mortality of 79.4 per cent. Although this high death-rate may be due in part to the employment of the intravenous route in the severest

TABLE VII.—Cases Treated by Serum: Deaths and Case Mortality.

| Methods of administration. | No. of cases. | | Died. | | Case mortality per cent.* | |
|----------------------------|-----------------|-----------------------|-----------------|-----------------------|---------------------------|-----------------------|
| | Present series. | Leishman and Smallman | Present series. | Leishman and Smallman | Present series. | Leishman and Smallman |
| T. | 25 | 25 | 22 | 21 | 88 | 84 |
| V. | 4 | 7 | 4 | 7 | 100 | 100 |
| S. | 23 | 27 | 18 | 15 | 78 | 55 |
| M. | 60 | 4 | 33 | 3 | 55 | 75 |
| T.V. | 9 | 14 | 7 | 11 | 78 | 78 |
| T.S. | 37 | 28 | 22 | 21 | 59 | 75 |
| T.M. | 102 | 13 | 67 | 9 | 66 | 69 |
| V.S. | 5 | 4 | 3 | 4 | 60 | 100 |
| V.M. | 4 | 2 | 3 | 0 | 75 | 0 |
| S.M. | 27 | 1 | 17 | 1 | 63 | 100 |
| T.V.S. | 8 | 20 | 4 | 17 | 50 | 85 |
| T.S.M. | 41 | 4 | 24 | 1 | 59 | 25 |
| T.V.M. | 20 | 5 | 18 | 3 | 90 | 60 |
| V.S.M. | — | 1 | — | 1 | — | 100 |
| T.V.S.M. | 7 | 2 | 6 | 1 | 86 | 50 |
| Totals ... | 372 | 157 | 248 | 115 | 67 | 73 |

TABLE VIII.—Intrathecal Route, Alone or in Combination.

| | | | | | | |
|------------|-----|-----|-----|----|----|----|
| T. | 25 | 25 | 22 | 21 | 88 | 84 |
| T.V. | 9 | 14 | 7 | 11 | 78 | 79 |
| T.S. | 37 | 28 | 22 | 21 | 59 | 75 |
| T.M. | 102 | 13 | 67 | 9 | 66 | 69 |
| T.V.S. | 8 | 20 | 4 | 17 | 50 | 85 |
| T.S.M. | 41 | 4 | 24 | 1 | 59 | 25 |
| T.V.M. | 20 | 5 | 18 | 3 | 90 | 60 |
| T.V.S.M. | 7 | 2 | 6 | 1 | 86 | 50 |
| Totals ... | 249 | 111 | 170 | 84 | 68 | 75 |

TABLE IX.—Intravenous Route, Alone or in Combination.

| | | | | | | |
|------------|----|----|----|----|-----|-----|
| V. | 4 | 7 | 4 | 7 | 100 | 100 |
| V.T. | 9 | 14 | 7 | 11 | 78 | 79 |
| V.S. | 5 | 4 | 3 | 4 | 60 | 100 |
| V.M. | 4 | 2 | 3 | 0 | 75 | 0 |
| V.T.S. | 8 | 20 | 4 | 17 | 50 | 85 |
| V.T.M. | 20 | 5 | 18 | 3 | 90 | 60 |
| V.S.M. | — | 1 | — | 1 | 0 | 100 |
| V.T.S.M. | 7 | 2 | 6 | 1 | 86 | 50 |
| Totals ... | 57 | 55 | 45 | 44 | 79 | 80 |

TABLE X.—Subcutaneous Route, Alone or in Combination.

| | | | | | | |
|------------|-----|----|----|----|----|-----|
| S. | 23 | 27 | 18 | 15 | 78 | 55 |
| S.T. | 37 | 28 | 22 | 21 | 59 | 75 |
| S.V. | 5 | 4 | 3 | 4 | 60 | 100 |
| S.M. | 27 | 1 | 17 | 1 | 63 | 100 |
| S.T.V. | 8 | 20 | 4 | 17 | 50 | 85 |
| S.T.M. | 41 | 4 | 24 | 1 | 59 | 25 |
| S.V.M. | — | 1 | — | 1 | 0 | 100 |
| S.T.V.M. | 7 | 2 | 6 | 1 | 86 | 50 |
| Totals ... | 148 | 87 | 94 | 61 | 64 | 70 |

TABLE XI.—Intramuscular Route, Alone or in Combination.

| | | | | | | |
|------------|-----|----|-----|----|----|-----|
| M. | 60 | 4 | 33 | 3 | 55 | 75 |
| M.T. | 102 | 13 | 67 | 9 | 66 | 69 |
| M.V. | 4 | 2 | 3 | 0 | 75 | 0 |
| M.S. | 27 | 1 | 17 | 1 | 63 | 100 |
| M.T.S. | 41 | 4 | 24 | 1 | 59 | 25 |
| M.T.V. | 20 | 5 | 18 | 3 | 90 | 60 |
| M.V.S. | — | 1 | — | 1 | 0 | 100 |
| M.T.V.S. | 7 | 2 | 6 | 1 | 86 | 50 |
| Totals ... | 261 | 32 | 168 | 19 | 64 | 59 |

* In Tables VII.-XI. the percentage has been worked out to the nearest whole number.

cases, still we cannot avoid the impression that the intravenous route presents dangers which are not encountered in the other three routes. This risk may sometimes, however, be well worth incurring in order to obtain a rapid effect.

Turning to the question of the subcutaneous, intramuscular, and intrathecal routes, the intramuscular combinations are once more found to be attended with the smallest mortality and the intrathecal with the highest of the three, but it is probable that several factors may play a part in this apparent inequality in the results.

In view of the great importance of making available at the earliest possible moment the largest possible dose of antitoxin, we consider that, in any given case, all three routes should be made use of, the intrathecal channel being exploited with the others as far as its limitations permit.

Like the authors of the previous paper, whom we quote, we are led by an examination of the tables to "fully appreciate the many pitfalls into which one may stumble in searching for truth among small figures dealing with cases presenting so many complicating factors."

Effects of the Dosage of Antitoxin Employed by the Several Routes.

Following the methods adopted by our predecessors, we have arranged our records in Tables XII. to XV. in such a

TABLES XII. to XV. show the Cases Treated by each of the Four Methods, either Alone or in Combination with the other Methods, contrasting the Average Amounts of Antitoxin used in the Fatal and Recovery Cases.

TABLE XII.—Intrathecal Method.

TABLE XIII.—Intravenous Method.

| Method of administration. | Number of fatal cases. | Average amount used by each route. | Number of recoveries. | Average amount used by each route. | Case mortality. | Method of administration. | Number of fatal cases. | Average amount used by each route. | Number of recoveries. | Average amount used by each route. | Case mortality. |
|---------------------------|------------------------|------------------------------------|-----------------------|------------------------------------|-----------------|---------------------------|------------------------|------------------------------------|-----------------------|------------------------------------|-----------------|
| T. | 22 | 9,968 | 3 | 12,166 | 88.0 | V. | 4 | 31,625 | 0 | — | Per cent 100 |
| T.V. | 7 | 8,393 | 2 | 15,000 | 77.7 | T.V. | 7 | 8,678 | 2 | 19,250 | 77.7 |
| T.S. | 22 | 9,920 | 15 | 11,123 | 59.4 | T.S. | 3 | 17,666 | 2 | 9,000 | 60.0 |
| T.M. | 67 | 4,238 | 35 | 22,233 | 65.6 | T.M. | 3 | 4,500 | 2 | 27,500 | 60.0 |
| T.V.S. | 8 | 11,807 | 35 | 14,240 | 65.6 | T.V.S. | 3 | 8,000 | 1 | 45,000 | 75.0 |
| T.S.M. | 41 | 22,294 | 35 | 57,336 | 65.6 | T.S.M. | 3 | 4,250 | 1 | 30,150 | 75.0 |
| T.V.S.M. | 7 | 6,125 | 4 | 25,500 | 50.0 | T.V.S.M. | 4 | 16,250 | 4 | 21,875 | 50.0 |
| Totals | 170 | 16,250 | 4 | 21,875 | 50.0 | Totals | 4 | 6,125 | 4 | 25,500 | 50.0 |
| | | 8,750 | | 26,125 | | | | 8,750 | | 28,125 | |
| | | 8,000 | | 6,000 | | | | 20,388 | | 12,450 | |
| | | 20,388 | | 12,450 | 90.0 | | | 6,000 | | 27,250 | 90.0 |
| | | 22,222 | | 27,250 | | | | 22,222 | | 27,250 | |
| | | 8,410 | | 16,805 | | | | — | | — | |
| | | 7,817 | | 14,138 | 58.5 | | | — | | — | |
| | | 20,021 | | 33,008 | | | | — | | — | |
| | | 13,750 | | 6,000 | | | | 15,665 | | 2,000 | |
| | | 15,666 | | 2,000 | 85.7 | | | 13,750 | | 6,000 | |
| | | 6,416 | | 30,000 | | | | 6,416 | | 30,000 | |
| | | 12,750 | | 54,000 | | | | 12,750 | | 54,000 | |
| Totals | 170 | — | 79 | — | 68.2 | Totals | 45 | — | 12 | — | 78.9 |

TABLE XIV.—Subcutaneous Method.

TABLE XV.—Intramuscular Method.

| | | | | | | | | | | | |
|----------|----|--------|----|--------|------|----------|-----|--------|----|--------|------|
| S. | 18 | 21,222 | 5 | 48,750 | 78.2 | M. | 33 | 28,972 | 27 | 39,914 | 56.0 |
| S.T. | 22 | 4,238 | 15 | 22,233 | 59.4 | M.T. | 67 | 22,294 | 35 | 57,336 | 65.6 |
| S.V. | 3 | 4,500 | 2 | 27,500 | 60.0 | M.V. | 3 | 4,250 | 1 | 30,150 | 75.0 |
| S.M. | 17 | 17,666 | 10 | 9,000 | 62.9 | M.S. | 17 | 16,007 | 10 | 37,700 | 62.9 |
| S.T.V. | 8 | 9,870 | 4 | 26,700 | 62.9 | M.T.S. | 18 | 16,007 | 10 | 28,700 | 62.9 |
| S.T.M. | 41 | 16,007 | 4 | 37,700 | 50.0 | M.T.V. | 24 | 22,222 | 2 | 27,250 | 90.0 |
| S.V.M. | — | 8,750 | — | 25,500 | 50.0 | M.V.S. | — | 20,021 | — | 12,450 | — |
| S.T.V.M. | 7 | 7,817 | 17 | 21,875 | 58.5 | M.T.V.S. | 24 | 20,021 | 17 | 33,008 | 58.5 |
| Totals | 94 | 8,410 | 54 | 16,805 | 63.5 | Totals | 168 | 8,410 | 93 | 16,805 | 64.3 |
| | | 20,021 | | 33,008 | | | | 7,817 | | 14,138 | |
| | | — | | — | | | | — | | — | |
| | | — | | — | | | | — | | — | |
| | | 6,416 | | 30,000 | | | | 12,750 | | 54,000 | |
| | | 13,750 | | 6,000 | 85.7 | | | 13,750 | | 6,000 | |
| | | 15,666 | | 2,000 | | | | 15,666 | | 2,000 | |
| | | 12,750 | | 54,000 | | | | 6,416 | | 30,000 | |
| Totals | 94 | — | 54 | — | 63.5 | Totals | 168 | — | 93 | — | 64.3 |

way as to show the full details of every dose given in the 372 cases. The tables thus correspond to similar ones of the previous series, with which they should be compared.

It is not proposed to attempt to analyse these tables in detail. The more the cases are subdivided under secondary headings the smaller the groups become and the less justification do we find for attempting to draw conclusions. On the other hand, taking the records as a whole, the dosage tends to be decidedly larger in cases that recovered than in the fatal cases.

This tendency is perhaps still more clearly seen in Table XVI. where, as in the previous series, the results obtained by each route individually are compared with those obtained by the same route in combination with one or more

TABLE XVI.—Comparing and Contrasting the Results Obtained by Each Route Individually with those Obtained by that Route in Combination with One or More Others.

| | Total cases treated. | Average dosage employed. | Died. | | Recovered. | | |
|--|----------------------|--------------------------|------------------|-----------------|------------------|----------------|-----------------|
| | | | Number of cases. | Case mortality. | Number of cases. | Recovery rate. | Average dosage. |
| Intrathecal route only | 25 | 10,232 | 22 | 88 | 3 | 12 | 12,186 |
| Intrathecal cmbd. with other routes. | 224 | 11,742 | 148 | 66 | 76 | 34 | 14,707 |
| Intravenous route only | 4 | 31,625 | 4 | 100 | 0 | 0 | — |
| Intravenous cmbd. with other routes. | 53 | 16,709 | 41 | 77.3 | 12 | 22.6 | 16,116 |
| Subcutaneous route only | 23 | 27,206 | 18 | 78.2 | 5 | 21.7 | 48,750 |
| Subcutaneous cmbd. with other routes | 125 | 12,578 | 76 | 60.8 | 49 | 39.2 | 21,316 |
| Intramuscular route only | 60 | 33,896 | 33 | 55 | 27 | 45 | 39,914 |
| Intramuscular cmbd. with other routes | 201 | 29,019 | 135 | 67.1 | 66 | 32.8 | 47,228 |

others. These apparently favourable results, however, require closer examination before they can be interpreted as definite evidence in favour of the value of antitoxin treatment in tetanus.

An obvious source of fallacy, capable of vitiating conclusions drawn from such records, is, that the early intervention of death leads to cessation of treatment and thus diminishes the total amount of serum given, in fatal as compared with favourable cases. In order to eliminate this source of error as far as possible, an attempt has been made to evaluate the effect of serum treatment with regard to the quantity given during the first 48 hours after the appearance of tetanic symptoms. The results are recorded in a total of 215 cases as to which the necessary information was available in our records. These cases are divided into four classes according to their relative severity, under the following headings: I. General Tetanus with Early Trismus. II. General Tetanus with Late Trismus. III. General Tetanus with no Trismus. IV. Local Tetanus. This differentiation, while perhaps rather slender as between Classes I. and II., affords a general idea of the types of case under consideration. It is to be noted that in 28 cases no serum was given during the first 48 hours. The results of this analysis are set forth in Table XVII.

TABLE XVII.—Effect of Serum Treatment with Regard to the Size of the Dosage During First 48 Hours after the Appearance of Tetanic Symptoms on Four Classes of the Disease.

| | Class I. | | Class II. | | Class III. | | Class IV. | |
|--|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|
| | No. of cases. | Case mortality. | No. of cases. | Case mortality. | No. of cases. | Case mortality. | No. of cases. | Case mortality. |
| Fatal cases | 102 | 70.8% | 53 | 70.6% | 13 | 58.5% | 2 | 8.6% |
| Recovered | 42 | | 22 | | 10 | | 21 | |
| Cases treated with serum { Fatal | 98 | 73.6% | 46 | 71.8% | 12 | 60.0% | 2 | 10.0% |
| Recovered | 35 | | 18 | | 8 | | 18 | |
| Cases receiving no serum { Fatal | 4 | 36.3% | 7 | 63.6% | 1 | 33.3% | 0 | Nil. |
| during first 48 hours { Recovered | 7 | | 4 | | 2 | | 3 | |
| Average number of units per case { Died | 14,986 | Recovered. 14,175 | Died. 16,738 | Recovered. 11,847 | Died. 21,000 | Recovered. 23,212 | Died. 11,250 | Recovered. 14,527 |
| during first 48 hours | | | | | | | | |

It will be seen in this table that the actual quantity of serum given within the first 48 hours was greater in the fatal cases than in the recovering cases in Classes I. and II., the opposite being the case in Classes III. and IV. The percentage of recoveries was higher amongst the 28 cases receiving no serum treatment within the first 48 hours than amongst either of the other groups. It must not be assumed on this account that the exhibition of anti-tetanic serum during the early stages of the attack is inadvisable. It is much more probable that in some of the 28 cases under consideration the initial symptoms were so slight as to escape recognition, and that these cases recovered because they were of a milder type than the others. This apart, Table XVII. shows clearly the danger of drawing conclusions from a comparison of the dosage throughout the course of fatal cases on the one hand and favourable cases on the other.

A stronger argument in favour of the value of sero-therapy in tetanus is to be found in Table VI., where a steady fall in case mortality is seen to accompany a rise in the average number of antitoxin units given. But here again other factors may be at work, and the gradual improvement in the early treatment of wounds which has developed with a ripened experience in war surgery may well play an important part in decreasing the general severity of tetanus cases.

GENERAL COMMENTARY.

Our analysis of the tetanus case-sheets at our disposal cannot be said to give any very clear indication as to the value of antitoxin treatment in tetanus. A steady fall in case mortality has undoubtedly taken place. Where, however, so many factors may have played a part, the greatest caution should be exercised in attempting to draw definite conclusions as to how this improvement has been brought about. It must be admitted that the employment of antitoxin has, up to the present, failed to produce such a striking improvement as to be at once apparent in statistical records. On the other hand, the dosage has been small.

The union of toxin and antitoxin may be assumed to take place on quantitative lines. Since we are still ignorant of the actual quantity of toxin requiring neutralisation in the average case, we cannot accurately decide whether the dosage of antitoxin hitherto given has or has not been on an adequate scale. On theoretical grounds we are inclined to the opinion that the dosage has not been large enough. It is possible that more striking results would have been obtained had larger doses been resorted to.

A point of more importance than any deduction from documentary records is the fact that the use of tetanus antitoxin is gaining ground amongst those charged with the care of cases. This would appear to indicate that clinical experience is leading to a favourable verdict, although statistical analyses are still inconclusive. It is clear, at least, that no ill-results follow this tendency to increase the dosage, as the mortality has fallen synchronously with it. When serum therapy is employed we are strongly of the opinion that the antitoxin should be given at the earliest possible moment and that it should be given in large doses.

Previous Analyses of Cases of Tetanus arising in the B.E.F.

1. Memorandum on the Treatment of Injuries in War published by the War Office in 1915. 2. An Analysis of Recent Cases of Tetanus in the British Expeditionary Force, with Special Reference to their Treatment by Antitoxin, by Colonel Sir William B. Leishman C.B., F.R.S., and Major A. B. Smallman, D.S.O., THE LANCET, Jan. 27th, 1917.

Analyses of Cases of Tetanus in England.

1. Analysis of Cases Treated in Home Military Hospitals from August, 1914, to August, 1915, by Surgeon-General Sir David Bruce, C.B., F.R.S., Brit. Med. Jour., Oct. 23rd, 1915. 2. An Analysis of Cases of

Tetanus Treated in Home Military Hospitals from August 1st, 1915, to July 31st, 1916, by Surgeon-General Sir David Bruce, C.B., F.R.S., THE LANCET, Dec. 2nd, 1916. 3. An Analysis of Cases of Tetanus Treated in Home Military Hospitals during August, September, and part of October, 1916, by Surgeon-General Sir David Bruce, C.B., F.R.S., THE LANCET, June 30th, 1917. 4. An Analysis of Cases of Tetanus Treated in Home Military Hospitals during part of October, November, and part of December, 1916, by Surgeon-General Sir David Bruce, C.B., F.R.S., THE LANCET, Sept. 15th, 1917. 5. An Analysis of Cases of Tetanus Treated in Home Military Hospitals during part of December, 1916, all January, February, and part of March, 1917, by Surgeon-General Sir David Bruce, C.B., F.R.S., THE LANCET, Dec. 22nd, 1917.

SUMMARY OF SIXTH, SEVENTH, EIGHTH, AND NINTH ANALYSES OF CASES OF TETANUS TREATED IN HOME MILITARY HOSPITALS

FROM MARCH, 1917, TO APRIL, 1918.

BY SIR DAVID BRUCE, K.C.B., F.R.S., F.R.C.P.,
MAJOR-GENERAL, ARMY MEDICAL SERVICE.

FIVE analyses of cases of tetanus treated in home hospitals have been published in THE LANCET.¹ The four further analyses, each of 100 cases, here summarised cover periods from March to June, 1917, June to September, 1917, September to December, 1917, and December, 1917, to April, 1918.

The Distribution of Cases of Tetanus from August, 1914, to April, 1918.

The number of cases of tetanus dealt with in the nine analyses and the rate of mortality are given in Table I.

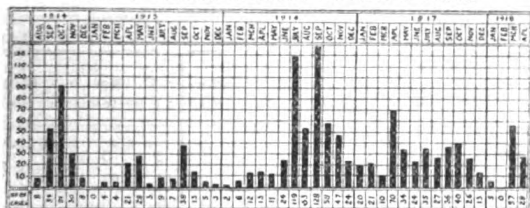
TABLE I.

| Analyses. | No. of cases. | Recovered. | Died. | Mortality. |
|----------------------------|---------------|------------|-------|------------|
| 1914-15 | 231 | 98 | 133 | 58% |
| 1915-16 | 195 | 99 | 96 | 49 |
| Aug.-Oct., 1916 | 200 | 127 | 73 | 37 |
| Oct.-Dec., " | 100 | 69 | 31 | 31 |
| Dec., 1916, to March, 1917 | 100 | 81 | 19 | 19 |
| March-June, 1917... .. | 100 | 71 | 29 | 29 |
| June-Sept., " | 100 | 85 | 15 | 15 |
| Sept.-Dec., " | 100 | 84 | 16 | 16 |
| Dec., 1917, to April, 1918 | 100 | 76 | 24 | 24 |
| Total | 1226 | 790 | 436 | 35.5 |

Diagram 1 merely represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war. They are taken from the date of wound, cases from the date of the onset of the

DIAGRAM 1.

CASES OF TETANUS BY MONTHS FROM DATE OF WOUND.



disease being shown in Diagram 2. The figures have no relation to the number of wounded or the number of troops engaged. The diagram shows periods of activity and inactivity in the fighting line.

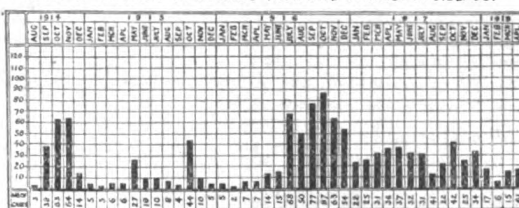
The Ratio of the Number of Cases of Tetanus to the Number of Wounded Soldiers.

Diagram 3 represents the ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals from August, 1914, to April, 1918. They are reckoned

¹ (1) THE LANCET, Oct. 23rd, 1915; (2) Dec. 2nd, 1916; (3) June 30th, 1917; (4) Sept. 15th, 1917; (5) Dec. 22nd, 1917.

DIAGRAM 2.

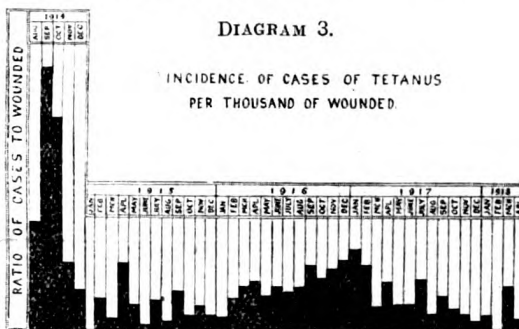
CASES OF TETANUS BY MONTHS FROM DATE OF ONSET OF DISEASE.



from date of wound, not from onset of disease. The abrupt fall in the ratio in November, 1914, is due to the introduction of prophylactic injections of antitoxin, which took place about the middle of October.

DIAGRAM 3.

INCIDENCE OF CASES OF TETANUS PER THOUSAND OF WOUNDED.



Incubation Period.

Table II. shows the relation between percentage mortality rates and incubation period in the various analyses.

TABLE II.

| Incubation period. | I. | II. | III. | IV. | V. | VI. | VII. | VIII. | IX. |
|----------------------------|----|-----|------|-----|----|-----|------|-------|-----|
| 10 days and under | 66 | 82 | 42 | 83 | 40 | 35 | 27 | 23 | 46 |
| 11 to 24 days | 39 | 52 | 37 | 30 | 25 | 34 | 29 | 15 | 21 |
| 25 days and upwards | — | 27 | 25 | 16 | 14 | 21 | 7 | 13 | 12 |

Table III. gives the average length of incubation of cases of tetanus treated in home military hospitals from August, 1914, to April, 1918.

Table IV. gives the number, in percentage of cases, with short, medium, and long incubation periods which have occurred since the beginning of the war to April, 1918.

TABLE III.

TABLE IV.

| Analyses. | No. of cases. | Average incubation | To 10 days. | 11 to 22 days. | More than 22 days. |
|----------------------------|---------------|--------------------|-------------|----------------|--------------------|
| | | Days. | % | % | % |
| 1914-15 | 231 | 13 | 47 | 46 | 6 |
| 1915-16 | 195 | 31 | 16 | 49 | 36 |
| Aug.-Oct., 1916... .. | 200 | 31 | 14 | 44 | 42 |
| Oct.-Dec., " | 100 | 45 | 13 | 27 | 61 |
| Dec., 1916, to March, 1917 | 100 | 67 | 10 | 21 | 69 |
| March-June, 1917 | 100 | 44 | 20 | 34 | 46 |
| June-Sept., " | 100 | 56 | 15 | 24 | 61 |
| Sept.-Dec., " | 100 | 47 | 13 | 31 | 56 |
| Dec., 1917, to April, 1918 | 100 | 47 | 26 | 29 | 45 |

Types of Tetanus: General and Local.

In the first six analyses the proportion of local tetanus to general tetanus was only given. In the seventh, eighth, and ninth analyses a more detailed classification is attempted.

In the sixth analysis there were 80 cases of general and 20 cases of local tetanus with a rate of mortality in the former of 36.2 per cent. There were no deaths among the local cases. In the seventh, eighth, and ninth analyses there were 223 cases of general and 77 cases of local tetanus. The

rate of mortality in the former was 25 per cent., in the latter there were no deaths. (Table V.)

TABLE V.

| | Cases. | Recovered. | Died. | Mortality per cent. |
|---|--------|------------|-------|---------------------|
| (a) Trismus the earliest symptom— | | | | |
| 1. With complete closure of jaws developing within 24 hours after onset of symptoms ... | 17 | 7 | 10 | 59 |
| 2. With complete closure of jaws developing after 24 hours... .. | 19 | 14 | 5 | 26 |
| 3. With incomplete closure of jaws | 111 | 85 | 26 | 23 |
| (b) Trismus occurring after other symptoms of tetanus have shown themselves | 57 | 46 | 11 | 19 |
| (c) General tetanus without trismus | 19 | 16 | 3 | 16 |
| (d) Local tetanus... .. | 77 | 77 | 0 | 0 |

Position of Wounds with Reference to Mortality.

Table VI. shows the position of wounds and the mortality rates per cent. in the third to ninth analyses.

TABLE VI.

| Position of wounds. | III. | IV. | V. | VI. | VII. | VIII. | IX. |
|---------------------|------|-----|----|-----|------|-------|-----|
| Body | 32 | 37 | 20 | 18 | 18 | 19 | 28 |
| Limbs | 68 | 27 | 17 | 36 | 13 | 13 | 20 |

The Effect of Fractures.

Table VII. shows the effect of fractures on the rate of mortality in cases of tetanus in the last four analyses.

TABLE VII.

| Wounds. | No of cases. | Recovered. | Died. | Mortality. |
|---------------------|--------------|------------|-------|------------|
| Fractures | 157 | 119 | 38 | 20.4% |
| No fractures | 243 | 197 | 46 | 19.0% |

Tetanus Occurring after Operative Treatment of the Wound.

In the four analyses there were 37 cases with 11 deaths, a mortality of 30 per cent. In three cases the prophylactic inoculation of antitetanic serum was reported to have been given before the operation, and in one case the prophylactic injection was only given on the day of the operation.

Prophylactic Treatment of Tetanus by Antitetanic Serum.

Table VIII. shows the rates of mortality per cent. up to April, 1918, in those who received and those who did not receive prophylactic injections.

TABLE VIII.

| Prophylactic injections. | 1914 to 1915. | 1915 to 1916. | Aug.-Oct., 1916. | Oct.-Dec., 1916. | Dec., 1916, to March, 1917. | March-June, 1917. | June-Sept., 1917. | Sept.-Dec., 1917. | Dec., 1917, to April, 1918. |
|--------------------------|---------------|---------------|------------------|------------------|-----------------------------|-------------------|-------------------|-------------------|-----------------------------|
| Received | 51 | 43 | 27 | 16 | 18 | 27 | 11 | 16 | 22 |
| Not recorded | 41 | 52 | 45 | 41 | 15 | 45 | 33 | 0 | 60 |
| None given | 63 | 56 | 55 | 65 | 29 | 20 | 57 | 14 | 50 |

TABLE IX.

| No. of cases. | Inoculated. | Recovered. | Died. | Mortality. |
|---------------|-------------------------------|------------|-------|------------|
| 264 | On day of wound. | 215 | 49 | 18% |
| 62 | 1 day after wound. | 48 | 14 | 22% |
| 14 | 2 days after wound. | 12 | 2 | 14% |
| 5 | 3 " " | 4 | 1 | 20% |
| 7 | 4 " " | 5 | 2 | 30% |
| 8 | More than 4 days after wound. | 8 | 0 | 0 |

Table IX gives all the available information in regard to the question what influence, if any, has promptitude in giving

these prophylactic injections on the rate of mortality. The figures relate to the sixth, seventh, eighth, and ninth analyses.

On the result obtained from multiple prophylactic injections.—The Tetanus Committee of the War Office have advised that four prophylactic injections should be given to every wounded soldier at intervals of seven days. Table X. represents (for the last four analyses) the rate of mortality of cases of tetanus which have received one to six prophylactic injections.

TABLE X.

| No. of inoculations. | No. of cases. | Recovered. | Died. | Mortality. |
|----------------------|---------------|------------|-------|------------|
| Received 1 | 125 | 94 | 31 | 25% |
| " 2 | 127 | 103 | 24 | 19 |
| " 3 | 52 | 43 | 9 | 19 |
| " 4 | 38 | 35 | 3 | 8 |
| " 5 | 14 | 13 | 1 | 7 |
| " 6 | 2 | 2 | 0 | 0 |

Table XI. gives the results of none or more inoculations on the period of incubation.

TABLE XI.

| No. of inoculations. | 6th hundred. | | 7th hundred. | | 8th hundred. | | 9th hundred. | |
|----------------------|---------------|----------------------------|---------------|----------------------------|---------------|----------------------------|---------------|----------------------------|
| | No. of cases. | Average incubation period. | No. of cases. | Average incubation period. | No. of cases. | Average incubation period. | No. of cases. | Average incubation period. |
| 0 | — | days. | — | days. | 7 | days. | 2 | days. |
| 1 | 38 | 45 | 36 | 47 | 25 | 28 | 27 | 22 |
| 2 | 31 | 49 | 31 | 66 | 33 | 30 | 31 | 23 |
| 3 | 10 | 39 | 15 | 62 | 13 | 62 | 14 | 56 |
| 4 | 2 | 127 | 5 | 60 | 16 | 70 | 15 | 111 |
| 5 | 2 | 97 | 2 | 79 | 3 | 94 | 6 | 134 |
| 6 | 1 | 68 | 1 | 122 | — | — | — | — |

Therapeutic or Curative Treatment.

All the 400 cases under review received therapeutic treatment with antitetanic serum. Of these 316 recovered, 84 died, giving a rate of mortality of 21 per cent.

Route of injection.—The Tetanus Committee in their memorandum are of opinion "that in acute general tetanus the best method of treatment lies in the earliest possible administration of large doses of antitoxin by the intrathecal route."

Influence of dosage.—Table XII. shows the influence of dosage on the curative action of antitetanic serum in the 400 cases.

TABLE XII.

(A) Total quantity of antitoxin given during the attack.
(B) Daily quantity of antitoxin given.

| Units received. | (A) | | | | (B) | | | |
|------------------|---------------|-------------|-------|-------------|---------------|-------------|-------|-------------|
| | No. of cases. | Re-covered. | Died. | Mor-tality. | No. of cases. | Re-covered. | Died. | Mor-tality. |
| 1,000 or under | 1 | 1 | 0 | 0% | 5 | 5 | 0 | 0% |
| 1,001 to 5,000 | 10 | 10 | 0 | 0 | 70 | 62 | 8 | 11 |
| 5,001 " 10,000 | 19 | 12 | 7 | 37 | 131 | 120 | 11 | 8 |
| 10,001 " 15,000 | 23 | 20 | 3 | 13 | 74 | 60 | 14 | 19 |
| 15,001 " 20,000 | 10 | 9 | 1 | 10 | 46 | 34 | 12 | 26 |
| 20,001 " 30,000 | 43 | 26 | 17 | 39 | 46 | 21 | 25 | 54 |
| 30,001 " 40,000 | 47 | 37 | 10 | 21 | 19 | 10 | 9 | 47 |
| 40,001 " 60,000 | 61 | 41 | 20 | 33 | 7 | 3 | 4 | 57 |
| 60,001 " 100,000 | 90 | 75 | 17 | 19 | 2 | 1 | 1 | 50 |
| 100,001 upwards | 96 | 87 | 9 | 9 | — | — | — | — |

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—Arrangements are being made for the establishment of a country branch for this hospital as well as for the enlargement of the present buildings.

CHRONIC INTESTINAL STASIS:

WHAT ARE THE INDICATIONS FOR OPERATIVE INTERFERENCE?

BY SIR W. ARBUTHNOT LANE, BART., M.S., F.R.C.S.,
CONSULTING-SURGEON, GUY'S HOSPITAL, ETC.

IN order to answer this question correctly it is necessary to have a thorough grasp of what intestinal stasis is and of the relative importance of its causal factors and of its end-results. These have been described so fully in previous publications that no repetition is required at the present time. I gave a general sketch of the causal factors in my discourse at the Social Evening of the Royal Society of Medicine on Feb. 12th, indicating briefly the origin of intestinal stasis in faulty training of the evacuating mechanism in childhood, the progressive results of loading of the alimentary canal from the lower end upwards, and the relatively little harm produced until stasis reaches as high as the ileo-cæcal valve.

In the vast proportion of cases of intestinal stasis no question of operation arises. The administration of paraffin before meals, the use of a Curris belt, the assumption of the recumbent posture at intervals, careful dieting, and the employment of such drugs as relieve the symptoms of hyperacidity, &c., will usually afford the patient complete relief.

Operation to Remove Obstruction Caused by Appendix or Ileal Kink.

The next group comprises those cases in which gastro-duodenal distension is clearly due to a damming back of the ileal contents by the pressure exerted by a "controlling appendix" or by an "ileal kink." The interference exerted by these structures may be greater than can be met by the simple treatment just described. Its degree can be determined from the appearance presented by the patient, by the history of the case, from the pain elicited on pressure on the inflamed and hypertrophied end of the ileum, and from the X ray findings.

The utility of a complete report on the passage of a bismuth meal by a competent radiographer who is experienced in this work cannot be exaggerated. It is futile to expect the surgeon to obtain much useful information from a series of radiograms, however good, taken at intervals. By far the most valuable portion of the information afforded by the skilled radiographer is obtained by means of screen work. Unless he is thoroughly familiar with the mechanical conditions which exist in stasis, which he can only learn by observing them frequently at the time of operation, the services of a radiographer are of little value to the surgeon.

Simple treatment having failed in these cases recourse must be had to operation. The removal of the anchored appendix or the freeing of the ileal kink is usually sufficient to liberate the duodeno-jejunal junction from the excessive strain which is responsible for the partial or complete occlusion of its lumen. It is well to remember that the membrane which produces the ileal kink when well developed appears to contain lymphatics and that these lymphatics drain what is always the most infected portion of the ileum. Therefore, after the acquired band has been dealt with by careful separation from the mesentery and by accurate apposition of any torn peritoneal edges, a drainage-tube should be left in for two or three days. This simple precaution may be the means of saving the patient from disaster. One must remember that the kink tends to re-form if the factors which produce it remain in action.

Should the symptoms or the X ray report suggest the presence of any obstruction elsewhere, and especially at the "last kink," it should be operated on at the same time.

Gastro-enterostomy.

The next question to consider is, What are the conditions requiring gastro-enterostomy? When a peptic ulcer is present in the stomach or duodenum, or in both, gastro-enterostomy should be performed, and in the case of gastric ulcer it should be excised, if it seems advisable, or otherwise dealt with to ensure its cure. When the stomach and duodenum are dilated and the latter obstructed by such a degree of kinking at the duodeno-jejunal junction that no freeing of the stasis in the lower bowel is likely to be sufficient to overcome this angulation, and as these con-

stitute antecedent changes in a sequence which ends in peptic ulceration and, finally, in cancer, a gastro-enterostomy should be performed.

Many are satisfied to regard peptic ulcers as primary conditions and to treat them by gastro-enterostomy with or without excision, gastro-enterostomy not being performed unless an ulcer is present. Much thought has been given to the best method of performing this operation, to the form of suture to be used, and to the advisability of occluding the pylorus temporarily or permanently. An ulcer of the stomach or duodenum merely suggests to the mind of the surgeon an operation on the stomach and nothing more. It is obvious that while gastro-enterostomy at once relieves the patient from the mechanical consequences of the obstruction to the duodeno-jejunal junction and from much of the pain and risk which they involve it has no effect whatever on the causal factor—namely, the control of the ileal effluent—while any pre-existing auto-intoxication remains uninfluenced by the surgical procedure.

To limit the operation to establishing a communication between the stomach and jejunum in peptic ulceration is, therefore, obviously unscientific, since the patient derives only partial benefit from it. The end of the ileum should be carefully examined and any obstruction removed, the "last kink" should be dealt with if it is exerting any abnormal control, as is usually the case in these conditions, and any other locality where delay has been shown to exist investigated and treated. To effect this a more extensive incision than is usually made is necessary. A very popular weakness of the surgeon is to do his work through a small opening, and this is largely responsible for his frequent failures to understand the conditions he is dealing with and to benefit his patient. This is well illustrated by what might be called the buttonhole operation for appendicectomy.

By carefully observing the form and functioning of the stomach and duodenum, both radiologically and at the time of the operation, and by gauging the effect of traction on the duodeno-jejunal junction, the surgeon should be able to decide as to whether a gastro-enterostomy is required or whether he should confine himself to dealing with the conditions which are controlling the intestine lower in the tract. How little the mechanical causation of peptic ulcers is understood is illustrated by an operation called gastro-duodenostomy, in which in cases of pyloric obstruction a communication is established between the stomach and a distended duodenum, which, as it is distended, must necessarily be obstructed at the duodeno-jejunal junction.

In the case of cholecystitis, with or without gall-stones, in which an operation is required the primary cause of infection in the intestinal canal should be as carefully investigated as in any other end-result of chronic intestinal stasis.

Colectomy.

Finally comes the question, What are the conditions which call for colectomy? In such conditions as extreme constipation in which an evacuation can be obtained only at intervals and with great difficulty and pain; rapid and progressive wasting; mental depression which may be so great at times as to make life intolerable both to the individual and the relations, not infrequently driving the patient to attempt suicide as the only escape from insufferable misery; total inability to lead an active life; a distressing absence of sexual desire leading to constant broils¹; progressive degenerative changes in the breasts of those with marked family history of cancer, toxic changes in the heart and circulation, and all secondary conditions such as rheumatoid arthritis, Raynaud's disease, Still's disease, many forms of tubercle, Bright's disease, Addison's disease: in these and many other conditions colectomy offers the only hope of cure.

By colectomy I mean the complete removal of the large bowel with the exception of a sufficient length of the pelvic colon to establish continuity. About twenty years ago I satisfied myself that the removal of the cæcum, ascending and part of the transverse colon rarely served a useful purpose, since the splenic flexure, last kink, and elongated pelvic colon still continued to control the effluent.

Should no complication arise such as the development of adhesions which interfere with the normal functions of

¹ A paper by McCarrison "The Pathogenesis of Deficiency Disease," an abstract of which is published in the British Medical Journal, Feb. 15th, 1919, has an interesting and important bearing on this subject.

the intestine, a condition which may follow any intra-abdominal operation, the health of the patient improves at once in a marvellous manner. Perhaps no alteration is more marked than the change in the mental state of the patient, showing how dependent the functioning of the brain is upon that of the intestine. The most miserable and wretched woman becomes happy, gay, and lively. The other symptoms clear up with remarkable rapidity.

The delay in the small intestine as shown by X rays affords a general indication as to the extent of the surgical interference necessary, but it is well to remember that the degrees of auto-intoxication and of the delay do not necessarily correspond, for the reason that a moderate amount of stasis may be associated with a very virulent infection, while the reverse may be the case. The surgeon must be guided very largely by the severity of the symptoms manifested by the patient. Much must be left to his experience and instinct. A very long pelvic colon associated with much sepsis always calls for colectomy, while a very large, prolapsed, and twisted cæcum can practically be dealt with in no other way. The surgeon will find that he will frequently wish that he had performed a colectomy instead of some lesser operation, but if he had performed a colectomy in the first place he will rarely, if ever, regret that he had done so.

It is difficult, if not impossible, to answer the question forming the title of this paper more definitely than has been done here. The vast majority of colectomies are performed for auto-intoxication and its results and not for the mechanical effects of stasis. In many cases of colitis the only effectual treatment consists in the removal of the large intestine. It is well to remember that in ulcerative colitis the process may extend for a distance up the ileum, and that the ulcerated segment of small intestine should be removed. The pelvic colon is also ulcerated in many cases. This necessitates the subsequent treatment of the residual ulceration by means of vaccines, &c.

The operative treatment of diverticulitis and of cancer of the large bowel calls for no special reference, beyond the statement that in a certain proportion of cases, especially in acute obstruction, it is safer and easier to remove the whole of the large bowel above the pelvic brim than it is a portion of it, while the health of the patient is benefited to a much greater extent by the more extensive operation, and the risk of recurrence is minimised.

Cavendish-square, W.

WHEELHOUSE'S OPERATION:

SOME POINTS WHICH ASSIST IN ITS PERFORMANCE.

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Mr. Wheelhouse first described his operation in 1876.¹ It was designed to deal with strictures through which a filiform bougie could not be passed, yet without retention of urine. Those through which a filiform bougie can be passed are suitable for dilatation or internal urethrotomy. Those associated with retention of urine are best treated by Cook's operation. But for the type under consideration Wheelhouse's operation is generally chosen. Yet it is often a difficult and tedious procedure, and not infrequently has to be supplemented by other methods. In order to surmount this difficulty I am putting forward certain methods which I have adopted in my own practice, and which I believe will be of service to others. The probability of success is increased if Wheelhouse's instructions are closely followed as regards the position at which the urethra should be opened in reference to the stricture—namely, "in the groove of the staff, not upon its point, so as certainly to secure a quarter of an inch of healthy tube immediately in front of the stricture." When the opening in the urethra is held open there is a cone-shaped portion of urethra, leading to the face of the stricture, at the apex of which the orifice of the stricture should be seen. This, however, is the point at which the operation frequently fails. The orifice can neither be seen, nor discovered by means of a probe. It is interesting to read Wheelhouse's original account of the operation, and to contrast it with the difficulties mentioned by subsequent authors.^{2, 7}

Causes of Difficulty.

The causes of difficulty will now be considered.

1. *Position.*—The position in which the operation is performed is inconvenient. In operations on the perineum it is customary to tilt the buttocks slightly, to bring them nearer to the horizontal, but, broadly speaking, it may be asserted that the wound occupies a vertical position, that such instruments as retractors and pressure forceps occupy the constant attention of an assistant, or will fall into inconvenient positions, whilst hæmorrhage from the wound tends to trickle vertically down the same. The position of the operator is awkward and constrained.

2. *The condition of the opening.*—In the practice of one experienced in the technique of urethral instrumentation only very tight strictures will be submitted to this operation, and many such strictures whose lumen could not be found by the passing of bougies will prove to be undiscoverable even when an attempt is made to pass a filiform or a probe under the direction of the eye. The orifice of numerous glands in the neighbourhood, or the openings of false passages may mislead, whilst the true opening is not infrequently concealed by oedematous granulations.

3. *Hæmorrhage.*—This arises chiefly from the corpus spongiosum, through which the incision passes. This body consists of cavernous tissue. This accounts for the difficulty often experienced in obtaining a dry field for operation, for it is often impossible to ascertain the position of the artery itself unless actually spouting, and to place clamps on the cavernous tissue is obviously futile. Oozing tends to be continuous and very disconcerting to the surgeon. Moreover, it must be remembered that the slightest trickling of blood is sufficient to obscure the opening of the stricture.

These, then, are the factors which, to my mind, make Wheelhouse's operation in many cases a difficult and tedious proceeding.

Procedure if Wheelhouse's Method Fails.

In the event of the operation failing the following possibilities are presented for choice: (1) Dissection of the perineum, in order to find the urethra proximal to the stricture; (2) suprapubic cystotomy and retrograde catheterisation; (3) Cook's operation.

Of these, Cook's operation may be summarily dismissed. It was introduced by its author as a method of treatment of cases in which retention is complete—in which, therefore, to use Cook's own words²—and these are of the essence of the operation: "the urethra is distended and enlarged between the prostate and the stricture." It is almost certain to fail where the urine can be passed, as in the cases for which Wheelhouse's operation is suitable, and in which, therefore, there is no distension of the urethra.

Dissection of the perineum behind the stricture.—The only position in the urethra at which it is necessary to do Wheelhouse's operation is the bulb. The majority of strictures occur in this structure—Thompson gives 67%, Young 70%.⁴ If strictures occur in front of this point, Wheelhouse's technique is unnecessary because the urethra is easily found proximal and distal to the stricture.

Fig. 1 shows: 1. That there is a very short length of urethra between the site of the stricture and the triangular

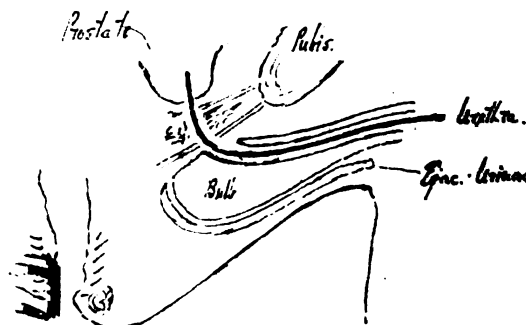


FIG. 1.—Note the amount of bulb lying posterior to the point where the urethra pierces the triangular ligament, the deep position of the bulbous urethra, and its shape. Strictures may occur in close relation to the ligament.

ligament. Sometimes, indeed, the stricture will occur just at the point where the urethra emerges from the triangular ligament. 2. That the urethra makes a bend at this point, so that the direction of that small portion of the urethra which lies between the stricture and the triangular ligament will be at right angles to the direction of the penile urethra, and therefore passing directly away from the surgeon.

These facts account for the trouble which is often experienced in finding the urethra proximal to the stricture, unless

indeed one incises the triangular ligament and searches for it behind that structure. To obviate the difficulty Young³ has recommended that a more posterior point be sought, as being easier to find. He sets himself therefore, deliberately, from the beginning of the operation to incise the perineal muscles down to the membranous urethra, to cut this and pass a guide from behind forwards to the stricture. This is certainly a deliberate and purposeful operation, but it involves injury to a very important muscle, the compressor urethrae, and a very deep dissection in the perineum.

The awkward position and hæmorrhage continue to annoy the surgeon, and render the dissection difficult in this as in previous stages of the operation.

Suprapubic cystotomy with retrograde catheterisation is an admission of failure to find the proximal urethra, and will only be undertaken if dissection of the perineum fails.

It will be seen that in the event of Wheelhouse's operation failing the advisable recourse is to a dissection of the perineum, but that this may be a difficult procedure.

Suggestions to Rectify the above Difficulties.

To bring the perineum into the true horizontal position and to fix it there steadily is the first necessity. To achieve this I resolved to adopt the Trendelenburg attitude.

When this position is used in operations upon the pelvis the tendency of the body to gravitate to the head end of the

1. The surgeon can stand to his work and the usual constrained position gives place to one of comfort.

2. The light falls directly on to the surface of the wound, a very important point.

3. As the operation area is in the horizontal position, instruments can rest on the sides of the incision just as they do around an abdominal wound. The advantages of this are very obvious. Amongst others it frees the assistant's hands for other work than supporting instruments and allows the surgeon to proceed systematically with the operation.

4. The perineum occupies a position higher than that of any other part of the trunk. I have found that the venous sinuses of the pelvis and perineum, including the corpus spongiosum, are thereby emptied, and that bleeding is much less in quantity and easier to control. I should like to lay emphasis on this important point. The field of operation is much drier and easier to work upon.

5. The patient is held very steadily, an item which surgeons themselves will fully appreciate.

6. The assistant obtains a much more direct view of the field of operation.

I have found these advantages to be very real and increase the comfort and facility of the operation very considerably.

The difficulty of finding the proximal urethra I have endeavoured to get over by staining with methylene-blue.

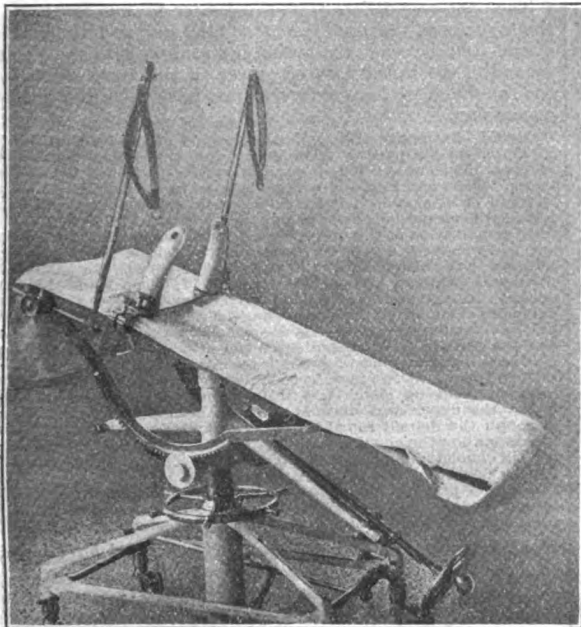


FIG. 2.—Table, showing metal band and uprights in position.

table is counteracted in two ways: 1. By the shoulder rests 2. By bending the knees and fastening the legs over the foot end of the table. It is obvious that the second method cannot be used when the perineum is to be operated upon, and further that the shoulders cannot be expected to bear the full weight of the body. If they were called upon to do so a brachial nerve tear would almost certainly result. Some other support had, therefore, to be found, and I resolved to utilise the iliac crests. For this purpose Messrs. Down Bros. have made to my specification a pelvic rest (Fig. 2).

It consists of two curved metal uprights, which are supported by a metal band and slide in slots to accommodate themselves to the breadth of the patient. They are fixed by thumb-screws. The band passes across the table and is rigidly screwed to it. When in use the uprights are adjusted so as to fit the iliac crests closely, a pad of cotton-wool alone intervening. The position on the table is so arranged that the buttocks protrude slightly over the end. When the feet have been fastened to the leg-rests the table may be tilted, the patient being held rigidly in position by the rests. It will be observed (Fig. 3) that the feet are attached to the outer side of the rests in order to render the perineum more accessible.

The advantages which accrue from this position are considerable and various.

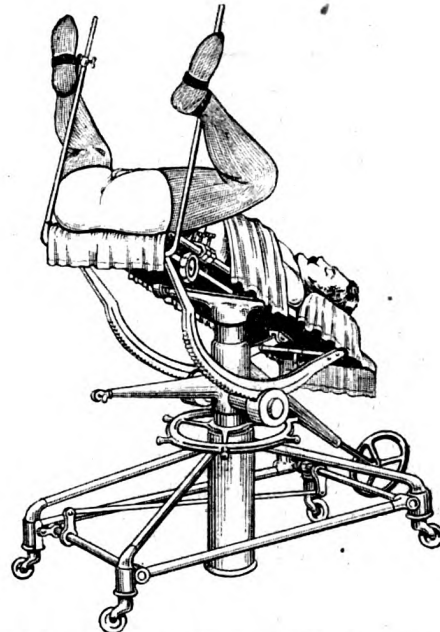


FIG. 3.—Patient in position prior to spreading of towels, &c. In practice it will be found convenient to work with the table more tilted than is indicated.

This is done half an hour previous to the operation. An ordinary urethral syringe is filled with methylene-blue, and the total contents are emptied into the urethra. An average anterior urethra holds about 10 to 12 c.cm., which is the capacity of an urethral syringe. The meatus is compressed with finger and thumb, and the blue is milked back in order to make certain that it has passed the stricture and reached the urethra proximal to the stricture. The patient compresses the meatus for ten minutes to ensure that the urethra is well stained. When he lets it go a certain amount of stain will be expelled. It is well not to stain the passage at too short an interval before operation, as the result would be that when the urethra was opened free liquid methylene-blue would escape into the wound and defeat its purpose. The patient is not allowed to pass urine for one and a half hours before going to the theatre.

By this means I have found that the urethra behind the stricture is much more easily identified, and on several occasions I have been able to trace the course of a sinuous stricture through the surrounding scar. The assistance given saves times and needless damage to the tissue of the bulb by dissection.

I have nothing of interest to say concerning the stages of the operation itself except that I believe I am enabled to do it by more definite and deliberate steps than is usual.

Thus the original incision is deepened till the ejaculator urinae is reached. The median raphe of this structure is easily observed and the incision now takes advantage of that bloodless line to the extent of about two inches. Each portion of the muscle should now be completely elevated from the bulb, so that the extent of that structure is exposed in the wound. By this means the opportunities of the surgeon for successful orientation are materially increased.

If when the urethra is opened I am not successful in quickly finding the opening into the stricture mouth I do not continue the search, but look for the stained urethra behind the stricture. This is generally more easily found and the operation quickly completed in the usual manner.

The sphere of usefulness of the position which I have represented is not limited to Wheelhouse's operation, but may be extended to many other procedures on the perineum, anus, rectum, vesicles, prostate, &c. I myself have so employed it in a few instances. For two cases especially, in which strictures were excised, I found it invaluable.

I am indebted to Mr. Ghosh, the resident surgical officer at the Salford Royal Hospital, who has kindly prepared the photographs for Figs. 2 and 3.

References.—1. Wheelhouse: Brit. Med. Jour., June 24th, 1876. 2. Cook: Guy's Hospital Reports, 1886, xii., 267. 3. Young: Johns Hopkins Hosp. Reports, 1906; The Treatment of Impassable Stricture of the Urethra. 4. Young: Ibid., The Treatment of Stricture of the Urethra. 5. Sir Henry Thompson: The Pathology and Treatment of Stricture of the Urethra and Urinary Fistula, 1885. 6. Jacobson and Rowlands: The Operations of Surgery, 5th edition, p. 684. 7. O'Byrne and Burghard: Manual of Surgical Treatment, v., 387.

Manchester.

GUNSHOT INJURIES OF THE CERVICAL NERVE ROOTS.

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(Report to the Medical Research Committee.)

INJURIES of the cervical nerve roots form only a small proportion of peripheral nerve lesions, but their recognition is often difficult as they are liable to be confused with injuries of the brachial plexus or spinal cord.

Although a vast amount of literature has been published during the last four years dealing with the various aspects of gunshot injuries of the brachial plexus, cauda equina, and peripheral nervous system in general, very scanty attention has been directed to lesions of the cervical nerve roots. From a careful study it appears that the pathological changes are somewhat different from those seen in injuries of peripheral nerves in other situations; and it is clear, from observations taken over long periods, that the prognosis is wonderfully good and that surgical interference is not required.

It is most convenient to subdivide the cases into two groups, according as to whether or not there is an associated lesion of the spinal cord.

1. Injuries of the Cervical Roots Uncomplicated by any Gross Lesion of the Spinal Cord.

CASE 1.—Patient was wounded March 9th, 1918, the bullet entering immediately below the chin and passing out through the left sternomastoid muscles three inches below the mastoid process. There was immediate loss of power in the left upper extremity, but the patient was able to walk back some distance to receive medical attention. Within a week he began to suffer from a burning pain in the thumb. Voluntary power began to return gradually at the wrist and finger-joints in about six weeks.

When examined in July the pain in the thumb was constant and severe, especially when the hand got hot, but there was excellent voluntary movement of the wrist and fingers. The spinați were completely paralysed, and there was only the feeblest voluntary "flicker" in the deltoid, biceps, and brachialis anticus, whilst the triceps and supinator longus were both markedly paretic. No objective sensory disturbance could be found. There was no loss of power or anaesthesia in the lower extremities, and the reflexes were normal, except that the knee-jerk on the left side was more active than on the right.

During the next month the deltoid, biceps, brachialis anticus, triceps, and supinator longus improved considerably, but no evidence of any return of voluntary movement in the spinați was noticed until the latter end of September, by which time all the other muscles mentioned, except the deltoid, had regained practically full power. At this time no difference in the reflexes on the two sides could be found. About this time the pain in the thumb abated considerably, and during the early part of October disappeared.

On examination early in November power was perfectly restored in the biceps, brachialis anticus, and triceps, but the patient was only able to abduct the arm to a right angle. The deltoid and spinați are still improving, and in eight months the functional recovery has been remarkably good.

It is clear that the fifth and sixth roots had suffered chiefly in this patient. The dissociation between the motor and sensory symptoms is of considerable diagnostic value, since implication of the upper trunk of the brachial plexus might have caused a paralysis of similar distribution, but there would almost inevitably have been more profound sensory manifestations. The following report shows a more marked dissociation.

CASE 2.—Patient received a gunshot wound on August 25th, 1918; the missile entered just to the right side of the seventh cervical spine and emerged through the anterior border of the lower half of the right sternomastoid muscle. The field medical card stated that the internal jugular vein had been severely lacerated, but no reference was made to any nerve or bone injury. He stated that at the moment he was hit he experienced pain in the right arm, which immediately became "limp and almost useless," but there was no affection of the lower extremities.

He was referred to me about three months after being wounded on account of severe pain in the right arm, which had developed during the last four or five weeks. He complained of a constant dull ache in the thumb and two outer fingers and a severe neuralgic pain down the outer side of the arm and forearm on movement. The limb had fully regained its power, as there was no perceptible weakness of any muscle on comparison with the other side, but the objective sensory manifestations were marked. There was hypoaesthesia and analgesia (to the prick of a pin) of the thumb and two outer fingers and the outer half of the hand, forearm, and arm almost as high as the acromion process. He also complained of what he described as "electric shocks" down the right leg on bending his head forward. The only objective disturbance to be found in the legs was some increase of the right knee-jerk.

In addition to the above symptoms there was also evidence of irritation of the right cervical sympathetic and injury to the right recurrent laryngeal nerve.

The next case differs from the former in two respects: in the first place, the root lesion is bilateral and there is less dissociation between the motor and sensory symptoms; and, secondly, the initial loss of power in the legs, which from the rapid and perfect recovery must have been due to spinal concussion.

CASE 3.—Patient received a gunshot wound of the neck on Oct. 1st, 1917, the missile passing transversely and apparently between the spines of the third and fourth cervical vertebrae without injuring the bones. There was immediate loss of power in all four limbs, but the legs and right arm soon began to improve, and the former had fully regained their normal power in six weeks.

On examination at the end of November it was found that the right arm had recovered except for paresis of the deltoid and slight hypoaesthesia in the distribution of the circumflex nerve. On the left side there was paralysis of the spinați, deltoid, biceps, and brachialis anticus; marked paresis of the triceps, and moderate weakness of the extensors of the wrist, thumb, and fingers, flexor longus pollicis, flexors of the index finger and the thenar muscles, together with anaesthesia and analgesia in the distribution of the fifth and sixth cervical roots. No disability or modification of reflexes was to be found in the legs.

During the next two months the forearm and hand muscles rapidly improved, and by March had fully recovered their normal power, whilst the upper arm muscles were all acting except the spinați, although the deltoid remained very weak. About this time it was noticeable how the objective sensory disturbances on the left side varied, both in character and extent, from week to week. At times a gnawing pain in the thumb was very troublesome.

Within a year from the date of being wounded there was a complete return of function, but some disturbance of the sensibility of the thumb persisted and at times the pain in this region recurred.

II. Injuries of the Cervical Roots Complicated by Lesions of the Spinal Cord.

In many of the former group, at the outset, paresis of the legs and slight differences in the deep reflexes on the two sides showed that there had probably been slight spinal complications, but the rapid and perfect recovery demonstrated that concussion was likely to be the cause rather than any gross pathological lesion.

It is not intended in this paper to refer to injuries of nerve roots accompanying severe lacerations of the cord, but only those cases in which the radicular lesions are the obtrusive feature and give rise to the chief disability. In this group I include all cases which give definite and persistent evidence of spinal complication by the presence of objective sensory disturbances or modification of the reflexes. In the first report the injury was localised chiefly to the anterior and posterior roots of the eighth cervical nerve. The difference in the deep reflexes of the legs on the two sides, which persisted, indicated slight implication of the cord, but it was insufficient to cause any serious subjective troubles.

CASE 4.—Patient was wounded on April 24th, 1917, by a rifle bullet, which entered the left sternomastoid and came out in the region of the spinous process of the second dorsal vertebra. There was immediate loss of power in the left arm, and some weakness in the left leg was noticed for a few weeks. The left pupil was larger than the right. An X ray report stated that there was "an injury to the eighth [sic] cervical vertebra."

On examination in October, 1917, the leg had completely recovered, the pupils were equal, and the left upper arm had regained full power. There was paralysis of the flexor profundus digitorum, interossei, lumbricales, and hypothenar muscles, with paresis of the flexor carpi ulnaris, adductor pollicis and the thenar muscles. In addition hypoaesthesia but no analgesia of the little finger and ulnar border of the

hand was found. The left knee-jerk was exaggerated, but there was no clonus or sensory loss in either leg, and the plantar response was flexor in type on both sides.

During the next six months there was some improvement in function owing to better flexion of the fingers, the lumbricals and flexor profundus digitorum to the index recovering and the parietal muscles gaining strength. When discharged the hand was very serviceable, but there was still paralysis of the interossei and hypothenar muscles. The exaggeration of the left knee-jerk also remained.

During the seven months he was under observation the most striking feature was the almost daily variation in the objective sensory disturbances in the left hand. The hypoesthesia was constant and persisted throughout, but from time to time it was accompanied by analgesia or hypalgesia to the prick of a pin, with occasionally thermal anaesthesia to water at 0° C. Heat was always well appreciated.

CASE 5.—Patient received a gunshot wound on June 24th, 1915; the bullet entered one inch above the inner end of the right clavicle and came out opposite the spine of the seventh cervical vertebra. An X ray examination revealed an injury to the transverse process of the seventh cervical vertebra and the fragment was subsequently excised. Immediately on being injured there was complete loss of power in all four limbs.

The left leg began to improve in two or three weeks and had practically recovered in two months, whilst the left arm began to recover in two months and steadily progressed, so that in about seven or eight months it was merely a little weak, and "went numb" in cold weather.

The right arm did not show any improvement until May, 1916, but after that time steady progress was maintained. Recovery in the right leg was first noticed about three months after being wounded, and continued for over a year.

I first saw the patient in December, 1917, when he had been discharged from the Army for almost 12 months and had neglected treatment. All the fingers of the right hand were tightly contracted into the palm, and there was paralysis and wasting of the flexor carpi ulnaris and all the small muscles of the hand, together with anaesthesia and analgesia in the greater part of the distribution of the eighth cervical and first dorsal roots. He claimed to be able to walk about half a mile, and could certainly get about easily without support, in spite of obvious weakness of the right lower limb; the deep reflexes of the right leg were exaggerated, and ankle clonus and an extensor plantar response were found also on this side.

The left arm and leg had recovered full power and range of movement. The left leg and left half of the trunk, as high as the level of the fourth dorsal segment, showed complete analgesia and thermo-anaesthesia of spinal origin. No sensory disturbance of any form was discovered on testing the right leg or left arm.

With treatment considerable improvement has occurred in the right arm, but the motor and sensory condition due to the spinal lesion have remained stationary.

When seen last, in November, 1918, all the muscles of the right upper extremity showed voluntary contraction, but considerable disablement resulted from a severe contracture of the flexor profundus digitorum, which has resisted all forms of treatment. The sensory loss in this limb was then confined to the two inner fingers and ulnar border of the hand. No disability could be found in the left arm, but the patient stated that the hand went weak and the inner border of the hand and forearm numb in cold weather.

The clinical history in the above suggests an injury to the lower cervical roots, complicated by a unilateral lesion (possibly haematomyelia) in the right lateral column of the cord.

A similar root injury has been seen recently accompanied apparently by a haemorrhage into the posterior column of one side, since the leg exhibiting marked alteration of the reflexes also showed loss of the postural sense, but unfortunately the patient was only seen once and it was not possible to follow the progress.

CASE 6.—Patient was wounded on Sept. 20th, 1917, by a machine-gun bullet, which entered just to the right side of the first dorsal spinous process and emerged under the left lower border of the mandible.

In a report on the examination at the base two days later it is stated that the muscles of the left arm were flaccid, except for the trapezius, and there was considerable weakness of the right arm. On the left side there was anaesthesia in the distribution of the fifth, sixth, seventh, and eighth cervical roots, whilst on the right there was hypoesthesia in the sixth and seventh cervical areas only. The left pupil was about half the size of the right. The motor power, sensation, and reflexes in both legs are recorded as normal.

By Oct. 20th there was some return of power in the muscles of the left upper arm and shoulder and the flexors and extensors of the wrist, with considerable reduction in the sensory loss and less inequality in size of the pupils.

During the early part of November he began to be troubled by weakness of the legs, especially the left, although up to that time he had been walking about freely without discomfort and no difference in the reflexes on the two sides had been found. Examination of the legs at this time failed to reveal any obvious difference in power or tone on the two sides, but the left knee-jerk was considerably exaggerated, and there was an extensor plantar response on this side. Some analgesia of the distal part of the right lower extremity was found, but sensation was normal on the left side.

During the next month the leg condition remained stationary and then began to improve slowly, so that by January, 1918, he was able to walk two or three miles although the altered reflexes remained. By this time the right arm had shown great improvement, there remaining merely some weakness of the hand-grasp; on the left all the muscles were now acting voluntarily, but there was still marked paresis of the shoulder and upper arm muscles and flexors of the fingers. The objective sensory disturbance was now negligible.

During the next two months improvement was maintained in both the legs and arms, but the left leg was still apt to give way after walking

two or three miles. The difference in the knee-jerks on the two sides was marked and an extensor plantar response was still elicited on the left.

On discharge in May (eight months after the injury) the right arm had fully recovered, but the patient maintained that its power was apt to vary, the left arm had regained full strength except for slight paresis of the flexors of the fingers. No objective sensory disturbance could be found, but the left leg still became weak on fatigue.

Pathology.

The most significant feature of the last case is the development of a disability of the legs during the latter part of the second month of convalescence. A similar complication was observed to develop at exactly the same time (seventh week after injury) in another patient with a lesion of the cervical nerve roots. The late appearance of this manifestation suggests that it cannot be due to any primary haemorrhage into the cord, but rather involvement from without—such as meningeal adhesions following organisation of a haemorrhage around the cord.

The persistence of unilateral exaggeration of the deep reflexes in Case 4 may be due to the same cause, but in that case it is interesting to notice that the plantar reflex was of the flexor type throughout.

The etiology of the leg disability in Case 5 is not likely to be the same. In the latter paraplegia was present from the first and only slowly improved, compared with the rapid recovery in Cases 1, 2, and 3 (where the spinal trouble was probably concussion), unilateral ankle clonus and an extensor plantar response persisted, and there was clinical evidence of interference with the spinothalamic bundle, as well as the pyramidal tract, shown by the loss of pain and thermal sensibility in the contralateral leg. The pathological lesion which seems most likely to cause such clinical signs is a small haemorrhage into the cord, it being most improbable that laceration by the missile could give rise to such well-localised symptoms. It is quite conceivable from recorded observations that the divulsive force of a bullet, as it passes in the vicinity of the spinal canal, could result in rupture of the small vessels in the cord.

Therefore, it appears likely that the symptoms of spinal cord complications in gunshot injuries of the nerve roots may be due to the following causes:—

1. *Concussion* in which recovery is rapid and complete.
2. *Meningeal adhesions* which will only give rise to clinical symptoms during convalescence, and usually in the latter part of the second month. Complications from this source may arise in a patient who has recovered from concussion or who has not previously shown any evidence of spinal complications.
3. *Haematomyelia* characterised from the time of the injury by definite evidence of a lesion of the spinal cord, which does not materially improve. From personal experience the haemorrhage appears to be most frequently unilateral and situated in either the posterior or lateral columns, but two cases have been seen recently in which the lesion appeared to affect the posterior columns on both sides.
4. *Laceration* in which the cord lesion is so severe that the radical injury becomes of quite secondary importance.

It is not quite so easy to decide upon the character of the injury to the nerve roots. At first the loss of conduction is usually profound and affects several roots, but from the rapid improvement it is clear that this must be due very largely to concussion. From a study of the course of the bullet it appears improbable, in most cases, that the missile could possibly have lacerated any root fibres in its course. In Case 3 the bullet passed transversely behind the vertebrae, and apparently between the third and fourth cervical spines, without injuring bone. In those cases where the roots are actually lacerated the concomitant injury to the cord is much more serious, and a high proportion of these injuries are probably fatal owing to laceration of the carotid or jugular vessels.

The frequency of bilateral root lesions, without serious injury of the cord, further supports the contention that serious laceration by the missile is rare in the patients under discussion. Injury to the nerve roots by fragments of bone can be responsible for only a small proportion, since X ray examinations only revealed bone injuries in about 16 per cent., and in a fair proportion of these the injury was so situated that it could not possibly implicate the nerve roots.

Therefore it seems possible that the loss of conduction, other than that due to concussion, in a large proportion is due to haemorrhage around the nerve roots from the numerous small vessels chiefly in the pia mater. This is supported by the striking variation from day to day, which has been referred to in several of the reports, in the objective sensory

symptoms. This variation is characteristic of compression and is only seen at a time when the hæmorrhage will have been replaced by fibrous tissue, which is liable to contract upon the nerve roots.

The late development of spinal symptoms, which I suggest are due to meningeal adhesions, is in agreement with this contention. The hæmorrhage from pial vessels is scarcely likely to be sufficient to cause compression of the cord, and it is only after sufficient time has elapsed for it to become organised that the symptoms make their appearance. The marked recovery indicates that the compression is rarely sufficiently severe to cause any serious destruction of fibres.

Diagnosis.

The segmental distribution of both sensory and motor symptoms is most helpful in diagnosing a radicular from a spinal injury. The absence of any alteration of reflexes or sensory disturbance below the site of the injury is further evidence against any spinal injury, but in so many root lesions there is some disturbance of conduction in the spinal cord also. A localised hæmorrhage into the grey matter might cause a lower motor lesion of more or less segmental distribution, but, instead of being accompanied by loss of sensation in the corresponding sensory segment of the same limb, would most probably be associated with altered reflexes on the leg of the same side. According to the size and position of the hæmorrhage there might also be sensory disturbances in the lower limbs, but these would show a different arrangement and dissociation from those due to lesions of peripheral nerves.

The differential diagnosis from brachial plexus lesions is often difficult. Signs of concomitant loss of conduction in the cord, even if only due to concussion, would be in favour of a root injury. The segmental distribution of symptoms is helpful in distinguishing from an injury of the lower part of the plexus, but of less service in differentiating from an injury of the trunks, which would also give segmental symptoms. In the latter difficulty, help may be obtained often from the greater and more frequent dissociation between sensory and motor symptoms in radicular lesions.

In some the decision is exceedingly difficult, and I have seen one patient in whom the brachial plexus was exposed in error right up to the intervertebral foramina with, of course, negative results. The clinical condition at the time of operation warranted the diagnosis of an incomplete division of the upper trunk of the plexus, but an inquiry into the history would have suggested the probability of the correct anatomical localisation.

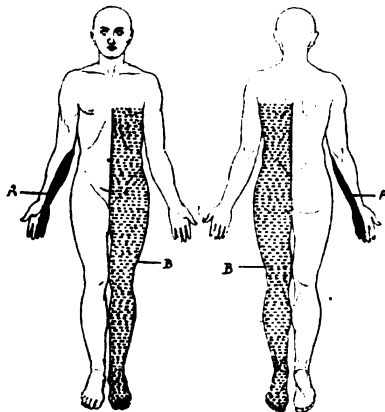
When suspicious of a root injury the presence of slight increase of the reflexes of the lower limb on the same side is of great diagnostic value.

Treatment.

From a survey of these reports it is apparent that the ultimate recovery is most striking, considering the great initial incapacity. It is necessary to consider the treatment of the radicular and spinal lesions separately.

Radicular injury.

The affected limb or limbs must be supported at the earliest possible moment, so that all paralysed or paretic muscles are relaxed. This is particularly important in lesions of the fifth and sixth cervical roots, since failure to support the deltoid and spinati in the early stages causes irreparable damage to the muscles, which will delay and limit recovery and render contraction of antagonistic muscles probable. At the outset, when the whole limb requires support, no appliance can compare with an abduction splint fitted with suitable forearm attach-



The objective sensory disturbance in Case 5. A, Of peripheral origin. B, Of central origin.

ment, which can be modified slightly to meet the special requirements of the patient, to support the muscles acting on the wrist, fingers, and thumb.

Of almost equal importance is daily passive movement of all joints to prevent mechanical limitation of mobility from contractures and arthritic adhesions. Persistent immobilisation at this time frequently gives rise to disabilities which last longer than those due to the nerve lesion directly, and in themselves may cause permanent incapacitation (Case 5). Beyond this little is required except daily massage of the whole limb to maintain general nutrition of the muscles as far as possible. With the earliest return of voluntary movement careful muscle training may be commenced, but care must be taken at first not to fatigue the recovering muscles. If the muscles have been well supported from an early date and daily mobilisation practised wonderfully good results can be induced by the skilful and persistent methods of muscle training.

The principles underlying the correct performance of this form of treatment have recently been most elaborately explained by Mackenzie.¹ The support of the muscles must not be dispensed with too early, not until a fair range of voluntary movement has returned, and even then it is preferable that the splint should be worn at night for a time.

In the later stages employment, suitable for further development of the recovering muscles, may be undertaken.

Spinal lesion.—In the type of case to which this paper refers the spinal lesion rarely causes any very serious trouble. The little spasticity which may be experienced can generally be relieved by massage and only infrequently persists. If it provided serious disability at a late stage and showed no signs of improvement, rhizotomy might have to be considered. The weakness in the legs usually improves with graduated exercises, and most patients have been able to walk two to three miles without discomfort.

The treatment of the scar has also to be considered, since it may restrict seriously the mobility of the neck. Ionisation and manipulation will generally loosen it sufficiently to prevent any serious limitation of movement, but in some the extent and character of the cicatrix may necessitate its excision.

¹ Mackenzie, C.: The Action of Muscles.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ERYTHREMIA.

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PHYSICIAN, SOUTH LONDON HOSPITAL FOR WOMEN.

THE following case was shown at a meeting held recently of the London Association of Medical Women.

The patient, a married woman, aged 60, had for many years noticed some blueness of the face and hands during cold weather and occasional epistaxis, but it was only after the death of her son 18 months ago that she observed swelling of the abdomen and other symptoms—e.g., frontal headache, a feeling of fullness in the head, pain in the upper abdomen, and some loss of flesh. When admitted to the South London Hospital for Women in February, 1918, there was congestion and cyanosis of the skin of the face, ears, and neck, the mucous membrane of the mouth and tongue was purplish in colour, and the conjunctivæ were injected. Discolouration of the forearms and hands was present and some dilatation of the veins of the legs. The arteries were thickened, the blood pressure measured 128 mm. Hg; the heart was normal. A blood examination gave the following result: Red blood cells, 9,510,000 per c.mm.; white blood cells, 30,000; hæmoglobin, 130 per cent.; colour index, 0.7. A differential count gave per cent.: polymorphonuclear cells, 86.8; lymphocytes, 8.6; hyaline cells, 1.4; eosinophil cells, 1.5. No abnormal cells were seen. The liver was enlarged, the edge being palpable 3 inches below the costal margin in the mid-clavicular line. The spleen formed a hard, somewhat nodular mass in the left hypochondrium, extending to the level of the umbilicus. The urine contained a trace of albumin; the specific gravity was 1013 to

1018. The urea excretion was fairly good, and there was no evidence of organic kidney disease.

The case was treated with calomel and saline aperients and a somewhat restricted diet. X ray treatment was applied to the spleen. Venesection was not done. The subjective symptoms had now to a great extent disappeared. The liver was smaller and the spleen, though not much changed in size, felt less hard. The abdominal pain was relieved by a belt, and the patient was now living an ordinary life with little discomfort. The last blood count showed 8,000,000 red blood cells and 13,000 white cells.

TWO CASES OF DISLOCATION OF TEETH.

BY H. MEARNES SAVERY, M.R.C.S. ENG., L.R.C.P. LOND.,
LATE C.S.O., IPSWICH HOSPITAL.

THE following cases may be of general interest, as I have not been able to find any literature on the subject, nor have I heard of similar treatment being adopted in the same circumstances.

CASE 1.—A lad of about 13 years received an accidental blow in the mouth from a stick. I found that his two upper centrals had been completely dislocated, hanging loose in the mouth, and falling into my hand on being touched. Considerable laceration of the soft parts and loosening of adjacent teeth. The teeth were not broken in any way, so having placed them in saline I cleansed the parts, removing all blood clots from the cavities, and using flavine (1-1000). The two teeth were then replaced, the lacerations of the gum necessitating a few points of silk suture. The patient was furnished with a lint pad to bite on and the jaw held up fairly tightly by a jaw bandage. Fluid diet only was allowed. Pad and bandage were kept on for 48 hours, ensuing treatment consisting in fluid diet and thorough cleansing of the teeth and mouth twice daily with swabs soaked in flavine (1-1000). In five or six days the solid diet was gradually given. Six months later I found the condition quite satisfactory. For some time the patient had been able to bite apples and tackle hard crusts with no discomfort.

CASE 2.—A youth, 18 years, was kicked in the mouth while playing football. The first and second bicuspid and first molar teeth of the right upper jaw were turned almost upside down, the crowns being forced up and separating an appreciable portion of the alveolar margin. I did not take away the teeth, there being a considerable attachment of gum. The parts were cleansed as in Case 1. Here the restoration of the "bite" was more difficult owing to the destruction in the continuity of the alveolar margin. After considerable manipulation this was accomplished and after-treatment instituted as in Case 1. I discharged this patient some time afterwards. The only fault in an otherwise perfect result was that two of the teeth were a fraction lower than previously, but this caused no inconvenience.

I am anxious to know if replacement of teeth is commonly carried out. It seems a pity that permanent teeth should be lost, as seems to happen so often in young people as the result of accident, if there is any chance, and there appears to be, that they might be saved.

Budleigh Salterton, S. Devon.

INTRAVENOUS INJECTION OF POTASSIUM IODIDE IN TABES DORSALIS.

BY F. J. DEVOTA,

SENIOR DRESSER, STATE HOSPITAL, KOTA BHARU, KELANTAN.

THE following case is of special interest as regards the beneficial effects of treatment by intravenous injection of potassium iodide in tabes dorsalis:—

An Indian, aged 41, working as a railway guard in the F.M.S. Ry. stationed at Pasir Mas, Kelantan section, was admitted into the State hospital, Kota Bharu, Kelantan, for treatment on April 27th, 1918. For the past three weeks he had been troubled with occasional shooting pains in the legs. He gave a history of gonorrhoea at the age of 27 and of having had a chancre when he was 37. On examination he was found to be suffering from many symptoms pointing to tabes dorsalis—e.g., pain in the limbs, loss of knee-jerks and ankle-jerks, loss of pupil light reflex, shooting pains in the lower extremities and also anesthesia of the feet and lower part of the legs; the patient could hardly walk.

On April 29th and May 6th and 13th the patient was given a full dose of "914," but no improvement was noticed, and he complained of very severe shooting pains in the legs and feet, especially at night-time; these pains were partially controlled by morphia. After three intravenous injections of potassium iodide (gr. 30 dissolved in 4 oz. of normal saline solution) improvement followed and the patient was discharged from the hospital on May 31st.

This patient was last seen by me on July 5th, working on the railway line, and I was informed by the patient himself that the shooting pains in the legs and feet had entirely disappeared ever since he was discharged from the hospital.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLGY.

A MEETING of this section was held on Feb. 21st, Mr. HUGH E. JONES, the President, being in the chair.

Radical and Modified Radical Mastoid Operations.

Mr. J. S. FRASER and Mr. W. T. GARRETSON (Edinburgh) contributed a paper on "Radical and Modified Radical Mastoid Operations: their Indications, Technique, and Results." In the absence of the authors, the paper was read by Dr. DAN MCKENZIE. The contribution was based on the analysis of 306 cases of chronic middle-ear suppuration, composed as follows: 238 radical mastoid operation, 17 modified radical mastoid operation, 26 labyrinthitis, 25 intracranial complications. The average age of the patients was 20 years. The most common causes appeared to be scarlet fever and measles. Sometimes the aural discharge had been attributed to a blow on the ear. In only 66 cases did the patients or their relatives remember the cause of the ear trouble. Among the precursory illnesses were: measles in 26, scarlet fever in 25, pneumonia 3, whooping-cough 1, mumps 1, small-pox 1, teething 2, cold 1, injury 6. Middle-ear suppuration the authors found to be much more common among the poor than among the better-to-do. If the cases of severe suppurative otitis media were properly treated when they arose there would be very little chronic middle-ear suppuration, and consequently the radical mastoid operation would seldom be called for. The public authorities had, however, turned a deaf ear so far to the remonstrances of otologists in the matter. In 1913 the International Medical Congress passed a resolution in these terms:—

"That it would be greatly to the advantage of the community if experts in otology and laryngology were attached to the special hospitals for the treatment of epidemic diseases."

The duration of the condition, according to the statements of the patients, varied from 5 months to 20 or 30 years. In only 48 cases was cholesteatoma diagnosed before operation, though at the operation it was found in 104. There was Eustachian obstruction in 34; in 70 cases the membrane showed results of chronic suppurative otitis media. In many of the cases there were more than one indication for operation present. In 33 cases there was chronic suppurative otitis media and failure of the conservative treatment; in 93 chronic suppurative otitis media with polypi or granulations was present, and in 57 chronic suppurative otitis media with pain, mastoid tenderness, and polypi. In 208 cases the mastoid cortex was found to be normal. Particulars of the 238 cases in which the radical mastoid operation was performed (the average stay of the patients in hospital was 22 days) were briefly given as follows:—Mortality: all cases, 5.3 per cent.; of uncomplicated cases, 0.7 per cent. Findings at operation: mastoid process sclerotic, 174; sclerotic diploë, 31; diploëtic, 12; cellular, 8. Cholesteatoma present in 104. Results: non-grafted (178 examined), 43 per cent. cured; grafted (70 examined), 70 per cent. cured. Hearing after operation: non-grafted: improved, 39 per cent.; unchanged, 39 per cent.; worse, 23 per cent. Grafted: improved, 29 per cent.; unchanged, 30 per cent.; worse, 38 per cent. Modified mastoid operation: 9 satisfactory, 3 had moist cavities, 10 had improved hearing, 2 had hearing unaltered, and 1 had worse hearing.

Discussion.

Mr. ARTHUR CHEATLE regarded the paper as a masterpiece in its way. He again urged the appointment of otologists to fever hospitals. The Government were warned in 1902 of the loss of man-power which had resulted from ear troubles, and the experience of the war had brought home the truth of what was then urged. Pensions would have to be paid for many years owing to cases of ear disease which might have been prevented. He recommended the appointment of a Standing Committee of six to watch the Public Health Bill. About 5 to 7 per cent. of candidates for the Royal Air Force had to be turned down on account of chronic middle-ear suppuration. In 1902 he examined many school children and found that 88 out of 1000 had chronic middle-ear suppuration. He considered that the cases in which the modified or incomplete

mastoid operation was justifiable were very few and far between, and for acute and subacute inflammation of the middle ear he regarded the incomplete operation as bad and unscientific; in some cases the Schwartz operation had to be performed after all.

Dr. J. KERR LOVE said there appeared to be a tendency to operate on all cases of chronic middle-ear suppuration. He had always under care about 500 school children with chronic middle-ear suppuration, and he could count on recovery without operation in more than half the cases. He everted the naso-pharynx and removed enlarged tonsils, and then subjected the external auditory canal and middle ear to careful treatment over a considerable period. He did the modified operation more readily in cases in which both ears were involved, unless the evidence very strongly favoured the radical operation. He believed operation had been unnecessarily done in many of these cases.

What Operation should be Performed?

Mr. CHARLES J. HEATH said he assumed Dr. Love did not perform the radical operation when both ears were involved because the modified operation was likely to secure retention of a more reasonable amount of hearing than was the Schwartz operation. On his, the speaker's, recommendation the Metropolitan Asylums Board had set up a hospital in London where all the children under their control who had ear discharge were sent. If, after a few weeks' treatment, the running did not cease they were operated upon by the conservative method. The ear dressing at the hospital was not a distressing procedure. In reply to a question, he said he had not published a summary of his results.

Dr. WILLIAM HILL did not believe all the operations done on the children under the Metropolitan Asylums Board were necessary, nor that the best form of operation for their trouble was selected. The meeting should let it be clearly understood that the specialty did not regard the Schwartz operation as obsolete, but considered it to be a good operation for acute and subacute cases. By the so-called conservative operation—that of Küster, revived by Charles Heath—he contended that the balance of the ear as a whole was altered, and it was exposing the ear to vicissitudes of climate, to draughts, and the entry of water. There was a strong line of difference in this matter. Was Mr. Heath right, or were the majority of otologists right? The matter needed thrashing out.

Mr. W. STUART-LOW pleaded for a better education of the general practitioner on the dangers of the later results of fugitive otitis media, which would lead to cases being sent to the otologist early. Attention to tonsils and adenoids would mostly prevent the onset of otitis. He considered that the radical mastoid operation should never be done on children. It was very sad to contemplate deafness as a sequel to the operation. He discussed the technique, and uttered a warning against tight bandaging.

Dr. J. DUNDAS GRANT said that very seldom was a Schwartz operation done for acute suppuration of the middle ear in which the patient did not get perfectly well; therefore he contended it was unnecessary to perform an operation which left a chronic fistula. If a fistula were left after a Schwartz, it would be called a very bad operation. He could not help feeling that Mr. Heath's teaching was responsible for some of the ear work which had been done on soldiers. He protested against the charge that the radical mastoid operation (the Schwartz) produced deafness, as it was an unfair statement. When the anterior part of the tympanum was shut off from the aditus and antrum, the modified operation, he agreed, was very strongly indicated; and he thought the results in cases shown by Mr. Heath to-day were admirable.

Mr. SOMERVILLE HASTINGS said in many of his Schwartz operations a sinus was left. He therefore tried the modified operation, and in his hands the operation had given admirable results in acute and subacute cases, healing occurring quicker also, and the dressing was easier and more satisfactory. He had now largely given up the Schwartz operation, especially for children. For chronic cases he did the Schwartz always.

When should a Bone Operation be Done?

Sir CHARLES A. BALLANOE suggested that the essential question in the discussion was, When should an operation on the bone be done? There were fulminating cases of acute otitis media in which the mastoid process was rapidly involved,

the cells becoming filled with pus after three or four days. Those required operation; wherever pus was present it must be let out. He thought there was nothing better than the Schwartz for those. If adequately and thoroughly performed in such cases it left perfect hearing, and healing occurred in a short time. He was interested to return, after a long absence, to find attempts still being made to improve the older methods. He was against the idea of carrying out any rigid operation as planned in the books; every operator should be prepared to vary it in such a way as to deal most effectively with what he found present. He insisted on the importance of absolute and free drainage of the tympanum. The tympanum should be interfered with as little as possible.

Dr. MCKENZIE briefly replied for the authors.

Septic Infection of Lateral Sinus after Injury at Operation.

Mr. HUNTER TOD read a paper entitled "Septic Infection of Lateral Sinus Accidentally Injured during the Operation of Mastoidotomy." The author included only those cases in which the mastoid operation was performed for chronic suppurative disease of the middle-ear cleft and mastoid cells, and in which, at the time of the operation, the sinus was apparently healthy. Septic infection of the sinus after injury rarely took place. These injuries were divisible into two groups: 1. A clean cut through the wall of the sinus, with profuse hæmorrhage, requiring obliteration of the lumen of the sinus. In these cases he had never observed subsequent infection of the sinus. 2. Grazing of the outer layer or puncturing of the sinus wall with no bleeding or with only slight oozing of blood for a moment or two, the injury being so slight as to escape notice unless a careful examination be made at the time of the operation. He gave details of six cases, four in his own practice, with one death. In the fatal case all seemed to be going well until the eighth day, when the patient had a rigor and the temperature rose to 103° F. Mr. Tod operated again on the ninth day, performing ligation of the internal jugular vein. Perforation of the sinus wall was discovered and a septic clot was removed. The autopsy showed septic thrombus and pus in the circular and both cavernous sinuses, extending into both ophthalmic veins. Mr. Tod's conclusions were as follows. Whenever the lateral sinus was exposed during the mastoid operation, careful examination should be made to see if it had been injured, even slightly. If so, it should be exposed freely on each side and its lumen obliterated by packing with gauze well beyond the affected area. There might be no evidence of infection of the sinus until the ninth day or later; a sudden rigor might be the first symptom. This, with an increased pulse-rate, should be regarded as a danger signal. If hæmorrhage occurred from the mastoid wound a few days after operation, it was not sufficient to arrest the hæmorrhage by applying pressure to the bleeding spot; the bone should be removed from the sinus wall above and below the affected area, and a gauze plug inserted between the bone and the outer wall of the sinus. Hæmorrhage associated with pyrexia or a rigor always meant septic infection, and in the latter case the internal jugular should always be ligated.

The paper was discussed by Dr. MCKENZIE, Mr. H. J. BANKS DAVIS, Mr. STUART-LOW, Mr. W. M. MOLLISON, Mr. HEATH, and the PRESIDENT, and Mr. TOD briefly replied.

LITERARY INTELLIGENCE.—A third edition of "Diseases of the Skin," by Dr. J. H. Sequeira, physician to the skin department and lecturer on dermatology at the London Hospital, is ready for publication in the hands of Messrs. J. and A. Churchill. It is illustrated by 52 plates in colour and 257 text-figures.

ABERDEEN ROYAL INFIRMARY: STAFF APPOINTMENTS.—The vacancies on the staff of the Aberdeen Royal Infirmary occasioned by the resignation of Dr. J. Scott Riddell and the death of Dr. A. H. Lister, the filling of the latter post having been postponed during the war, have been filled by the appointment of Dr. Fred. K. Smith, the senior assistant surgeon, to the office of surgeon, and Dr. Thomas Fraser, the senior assistant physician, to the post of physician. The vacancy occurring through the resignation of Dr. W. Sinclair, the late superintendent, has been filled by the appointment of Miss Edmondson, the matron, who has performed the duties during the last three years, to the joint office of superintendent and matron.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD,
PROFESSOR OF PATHOLOGY AND THERAPEUTICS IN THE
UNIVERSITY OF PARIS.

AND

Dr. CHARLES FLANDIN, D.S.O.,
MÉDECIN-MAJOR DE 2^{ME} CLASSE; CHEF DE CLINIQUE
À LA FACULTÉ DE PARIS.

THE SURGICAL COMPLICATIONS FOLLOWING EXANTHEMATIC TYPHUS.

By DR. PAUL MOURE AND DR. ETIENNE SORREL,
PROFESSORS TO THE FACULTY OF MEDICINE, PARIS; MÉDECINS AIDE-
MAJORS DE 1. CLASSE; SURGEONS TO THE FRENCH HOSPITAL
AT JASSY.

THE surgical complications following typhus or relapsing fever generally supervene at the end of the febrile period or at the commencement of convalescence. The patients are at the time in a state of feebleness, which predisposes them to the development of secondary infections.

Micro-organisms, agents of these secondary infections, can easily find a door of entry, in order to penetrate into an organism already profoundly enfeebled. On the one hand, bedsores over the sacrum, buttocks, or trochanters frequently offer them free access; on the other hand, the bucco-pharyngeal mucosa, dry and ulcerated as it is at the height of the fever, is a constant focus of infection.

These facts lead us to understand how nearly all the surgical complications which we have had to treat among convalescents from exanthematic typhus and relapsing fever have only been, so to say, the indirect result of these two affections, their direct cause being the organisms of super-infection, ordinary micro-organisms such as staphylococci, and especially streptococci. Never in the suppurative complications following relapsing fever have we recovered from the pus the spirillum, the pathogenic agent so easily discovered in blood films. When the still unknown organism of typhus is discovered it should, of course, be sought for in the infected tissues and in the pus from abscesses, but we can say in advance that most of the suppurative complications observed by us during the epidemic of 1917 in Roumania were due to the streptococcus. Danielopol, who during this epidemic made numerous blood examinations, was able by blood culture very frequently to find the streptococcus in the blood of typhus patients at the height of the disease, or at the beginning of convalescence, proving thus that many typhus convalescents are, in fact, suffering from more or less latent streptococcal septicæmia.

On the other hand, blood cultures carried out in the laboratory of Professor Cantacuzène by Dr. Jonnesco, and in the laboratory of Professor Slatineanu by Dr. Nasta, were nearly always negative.

However this may be, the typhus patient who reaches the end of the recurrent febrile period of his illness, lasting from 12 to 16 days, is again exposed, and this in a considerable proportion of cases, to the development of secondary infections likely to end fatally.

These patients, who are, in fact, septicæmic, may present all the localisations and all the forms of metastatic abscess. Nevertheless, the serious localisations have been in our experience rare, and we can classify as follows the surgical complications following exanthematic typhus with which we have had most frequently to deal: (1) Bucco-pharyngeal complications; (2) auricular and mastoid complications; (3) parotid infections; (4) laryngeal complications; (5) ocular complications; (6) large subcutaneous abscesses; (7) gangrene; (8) erysipelas.

I. Bucco-pharyngeal Complications.

Infection of the bucco-pharyngeal cavity, for which the way is opened by the dryness and ulceration of the mucosa existing at the height of the disease, may serve as a point of departure for general infection without there being any demonstrable local lesions, but the local infection often develops on its own account, determining a series of complications, such as gingivitis, osteitis, necrosis of the jaw, and suppurative inflammation of the cervical glands.

Gingivitis has been frequent because, in view of the number of patients and the difficulties of hospital organisation which only came into being at the moment of retreat, most of the patients could not receive the small attentions

necessary for severely febrile cases. Simple gingivitis was the most frequent form, but it was not unusual to see *periostitis* develop with loss of several teeth or *necrosis* of the jaw. Looking at the gravity of the general symptoms and the state of prostration, the localised gingivitis naturally turned one's thoughts to scurvy, but although some typhoid cases were identified at this time in our patients who had a suspicious gingivitis, we were unable to show the presence either of petechiæ, ecchymoses, or the characteristic muscular induration.

In one case we observed *total necrosis* of the mandible in a patient who was admitted moribund to one of our wards. The mandible could, without anaesthesia, be removed in two pieces after division in the middle. All the muscular attachments and ligaments had been destroyed by suppuration, and the bone was only held by a few fibres at the level of the temporo-maxillary articulation. The specimen was presented to the Medico-Chirurgical Society of Jassy.

The gum infection, periosteal or osseous, which attacked especially the mandible, spread sometimes to the cellular spaces and cervical glands; we were able to observe all the forms—fulminating, acute, subacute, and chronic (generally the two latter)—of suppurative and non-suppurative cervical adenitis.

One rather peculiar fact is the frequency with which we have seen tuberculous *adenitis* develop. It seems as if relapsing fever specially predisposes to inflammation of the lympho-glandular apparatus. But, faced with the simultaneous occurrence of exanthematic typhus and relapsing fever, it was often difficult to apportion the part played by each of these affections. Most of the cervical adenitis, whether uni- or bilateral, involved the sub-maxillary or carotid glands, sometimes affecting simultaneously all the glandular chains of the neck and mediastinum. Among these cases of adenitis, some, by their slow development, their localisation, and the mobility of the glands, justified surgical extirpation with ultimate excellent results; others, by their rapidity, extent, and quick diffusion, rendered all surgical intervention impracticable.

In certain cases we observed in the glands of the neck mixed infections, a secondary infection with streptococci or staphylococci becoming superimposed on the tuberculous lesion already healed. This gave rise to a subacute adenitis, the glands suppurating and breaking down, leaving permanent fistulæ after incision or spontaneous discharge. Moreover, it was not uncommon to see such subjects carried off rapidly after some weeks by pulmonary or a terminal miliary tuberculosis. In one case we found chains of streptococci in films made from pus contained in the glands excised with the knife, while a guinea-pig became infected with tuberculosis after inoculation with a fragment of these same glands, the microscopic appearance of which left no doubt of their tuberculous nature.

By the side of this cervical adenitis, which is the most frequent, we have observed axillary and inguinal adenitis, singly or in combination or alone, the prognosis of which is generally more hopeful.

II. Auricular and Mastoid Complications.

The bucco-naso-pharyngitis, which occurs so frequently in typhus convalescents, readily explains the large number of cases of otitis media and mastoiditis which we have had to treat.

Otitis media generally supervenes at the height of the disease or at the beginning of convalescence. If its commencement is sometimes ushered in by pain of an acute character preceding by some days the ear discharge, little or no pain is more often noted, the otorrhœa appearing as the first symptom of the complication. The otitis media of usual onset is sometimes unilateral, but more often bilateral; it is generally accompanied by a slight rise of temperature, after which the discharge appears. The pus, at first serous, becomes purulent, and contains the streptococcus alone or associated with other organisms. Treated by ordinary

means, these middle-ear inflammations generally tend to heal, but some leave sequelæ, becoming chronic or complicated by mastoid infection.

Mastoiditis following exanthematic typhus also shows this peculiar characteristic of developing generally in a sluggish form. This explains why patients generally came to us at a late period of their lesion. The latency, intelligible enough when the complication supervenes in very prostrate subjects, appears more curious when the convalescent's general condition is less precarious or when he even seems definitely cured. A certain number of our patients have thus come first to consult us many days or even weeks after having left the typhus hospital. They then complained either of ear discharge, which alarmed by its quantity or persistence, or of a swelling behind the ear presenting the obvious features of a subcutaneous abscess of mastoid origin. This latency of subjective symptoms was in contrast with the frequent extent of the anatomical lesion. Often the infection involved all the mastoid cells from base to tip. Pus came to light under the skin behind the ear or spread downwards towards the neck, along the sheath of the sterno-mastoid or the posterior belly of the digastric. One of our patients had a large deep abscess in the temporal region following mastoiditis with caries of the wall of the auditory meatus. The lesion led us to make a large petro-mastoid resection through a pre-auricular incision, the patient making a perfect recovery after radical cure.

In one patient suffering from otitis media with abundant discharge a swelling appeared behind the angle of the jaw, at the same time as the aural discharge diminished. This swelling, the size of a nut, and inconvenient rather than painful, caused limitation of the movement of rotation of the head and slight trismus. The diagnosis lay between a subacute adenitis and mastoiditis with cervical abscess. The first hypothesis appeared the most reasonable, inasmuch as pressure over the region of the antrum produced no pain at all. An exploratory incision showed a perforation of the tip of the mastoid process, which was then cleaned out completely, as it proved to be filled with granulations from the tip to the base, and extending to the external wall of the lateral sinus.

This sluggish behaviour sometimes masked lesions of considerable extent, and tending to complications involving the brain. In one patient suffering from fungous mastoiditis with sequestrums, an abscess of the temporal lobe of the brain was discovered and emptied. The lesion, which appeared at first to improve, caused death from encephalitis with hernia of the brain two months after operation.

Most of these cases of mastoiditis with clinically slow and subacute onset were found to be fungating mastoiditis; examination of the granulations revealing nearly always the presence of the streptococcus with or without other organisms. But the pus removed at the time of operation has never shown more than a small number of micro-organisms, generally one to three in a field.

In the treatment of these cases of mastoiditis we have always employed the classic method, trephining the antrum and scraping out the mastoid process, guided by the lesions and under the control of the frontal mirror. After curetting all the affected parts, the retro-auricular wound is closed with horse-hair and a Carrel's tube introduced into the antrum. The next few days the mastoid cavity thus closed is irrigated with Dakin's solution according to Carrel's method, and a regular count of micro-organisms made. In most cases (save those complicated by brain lesions) a rapid disinfection of the operation cavity resulted and complete cicatrization followed which, in 70 per cent. of the cases, did not occupy more than 25 days.¹ The prognosis in these post-typhus mastoiditis cases was generally good, provided that surgical intervention was early enough to anticipate the more deadly brain complications.

III. Parotid Infections.

Post-typhus parotitis has a similar origin to that occurring in other prolonged febrile diseases, but this complication is, in exanthematic typhus, particularly frequent. It is favoured by the arrest of the parotid secretion during the febrile period, leading to dryness of the mouth and rapid bacterial multiplication. The onset occurs at the end of the acute period, sometimes in advanced convalescence. We have seen all forms of parotitis, from simple parotid inflammation

on one or both sides without suppuration to actual gangrene. The most frequent forms were the suppurative and the gangrenous.

As a rule patients evacuated from a distance reached us with much delay and with suppuration fully developed; we rarely saw the beginning of the complication. Suppurative parotitis showed its text-book characters. Generally spontaneous liberation of the contents occurred, sometimes through the skin, but more often into the auditory meatus. Otoscopic examination demonstrated swelling on the anterior surface of the canal, with a fistulous orifice situated at the junction of the cartilaginous and bony portions. Pressure on the gland caused pus to exude from this orifice. Examination of the buccal cavity showed a dry mouth, with sordes and mucous excoriations, the orifice of Stenon's canal showing red.

The course of suppurative parotitis was generally long and grave. After incision, if intervention had been early, the swollen parotid wound allowed serous discharge to flow away for some 48 hours, after which frank suppuration was established and persisted for a long while whatever the treatment adopted. For two, three, or five weeks the operation wound could be seen suppurating, but slow recovery generally took place.

The gangrenous forms were not exceptional, but their gravity was considerable. It seems, moreover, that the form of the actual parotitis stood in some relation to the general condition of the patients; those with the worst attacks presenting the grave forms of parotitis. In gangrenous parotitis, most often bilateral, complete elimination of the gland and neighbouring cellular tissue was noted in the form of yellowish pulp and shreds. The skin, red and œdematous, sloughed round the incision, which was sometimes the point of origin of erysipelas. In one of our patients a true phlegmon of both parotid regions developed, with considerable œdema of the face and ulceration of the external carotid which occurred during a dressing. Pressure forceps were applied and left *in situ*, and after large incisions on both sides and drainage of the subparotid spaces complete recovery fortunately occurred.

When the parotitis showed a tendency to heal after long and profuse suppuration, the wound, which for long had appeared atonic, resumed a healthy red colour and began to granulate. The cavity, often enormous, opening up the whole bed of the parotid, filled up, and complete cicatrization occurred. In the many cases we had to treat neither facial paralysis nor salivary fistula was ever noted.

The treatment employed was always a curved incision over the angle of the jaw under local anaesthesia or after a few whiffs of ethyl chloride. The incision was followed by opening up the gland with the curette, in order to remove at once a large part of the dead tissue, the gradual elimination of which was found to retard healing. Irrigation of the operation cavity with Dakin's solution rendered equally good service.

The pus from these parotid inflammations contained streptococci, sometimes alone, sometimes with other micro-organisms, but we were not able to identify the cocci and bacilli seen in the films of pus. It is nevertheless probable that the gangrenous forms of parotitis resulted from the association of streptococci and anaerobes, a fact recently demonstrated in the case of gunshot wounds.

IV. Laryngeal Complications.

In regard to the larynx,² two kinds of complications were noted—the one early and occurring at the height of the disease, true *laryngo-typhus*; the other a late complication, a sequel to lesions of the submucosa and cartilages, determining stenosis of the larynx.

Laryngo-typhus occurs with the text-book characters, analogous to that which supervenes in the course of typhoid fever. We saw a typical case in which the laryngeal localisation was the first symptom of the malady, preceding the characteristic rash the appearance of which some days later allowed the diagnosis to be made. The patient died suddenly one night from a crisis of suffocation, some days after the appearance of the rash.

Laryngeal stenosis following exanthematic typhus is fairly frequent. These cicatricial lesions of the larynx probably follow localised secondary infections of the laryngeal cartilages.

¹ A memoir on this subject appears in the *Revue hebdomadaire de laryngologie, otologie, rhinologie de Bordeaux*, No. 20, 1917.

² See on this subject "La Pathologie de guerre du larynx et de la trachée." By Moure, Liebaux, Canuyl. Paris: Félix Alcan

In the first instance a laryngeal chondritis is met with, there is a general suppurative condition, with intra- and extra-laryngeal abscesses, and consecutive fistulae. When the patient has not been carried off either by the general attack or by local complications, particularly of respiratory type, a progressive cicatricial stenosis of the larynx takes place. Generally the clinical phenomena succeed each other in the following chronological order: The typhus patient presents either at the beginning or at the height of the disease signs of laryngitis, which are but the exaggeration of the usual enanthem, which generally accompanies the exanthem in a marked form; later the laryngeal phenomena increase in intensity, the larynx becomes painful, and there is complete aphonia. Laryngoscopic examination reveals œdema and a wide infiltration of the laryngeal mucosa, the ventricular bands covering and concealing the vocal cords. Soon respiratory troubles appear which necessitate tracheotomy. The lesions may be arrested at this stage, but generally the cartilages are attacked by the infection, and chondritis and perichondritis lead on to suppuration; the laryngeal region becomes painful, red, hot, and œdematous; abscesses form which discharge spontaneously or are evacuated surgically. Suppuration persists for a long time with elimination of the cartilages, after which, little by little, the inflammatory symptoms die down, the fistulae dry up after many weeks, and when the cannula comes to be removed it is found that the patient cannot breathe or breathes very badly through the larynx. One is in the presence of a "canulard." With our friend Dr. Costini, chief of the special centre at Jassy, we saw a number of such cases. The only rational treatment to apply to these canulards is laryngostomy with dilatation of the larynx.

V. Ocular Complications.

The ocular complications of typhus have been recently treated of by Dantrelle in an excellent thesis, the conclusions of which we transcribe:—

Exanthematic typhus may produce complications of two kinds. The first group includes complications at the height of the disease, due to the malady itself, localised in the visual apparatus. In this group are included: Lesions of the iris and lens; lesions of the choroid and retina; lesions of the optic nerve and central vessels; ocular paralyses. From their appearance these lesions are probably of vascular origin, which is in accordance with the other manifestations and with the morbid anatomy of the disease. They are of grave consequence to the vision, and treatment is often powerless against them.

The second group, more important numerically, is constituted by complications which supervene during the first days of convalescence. Following sometimes on simple erysipelas, they are due to the streptococcus. In this group are included palpebral abscess, phlegmon of the orbit, corneal ulcers, and optic atrophy secondary to streptococcal infection.

We have ourselves seen abscesses of the eyelids, especially if the upper, and phlegmon of the orbit in patients who had other lesions necessitating continued care in a general surgical ward. We might mention, among others, the case of a patient who presented simultaneously two large abscesses of the thigh and of the thoracic wall, a phlegmon of the orbit of the right side, and an abscess of the left upper eyelid. The course was naturally fatal.

VI. Large Subcutaneous Abscesses; Phlegmon of the Limbs.

Very frequently in patients recovering from typhus we have seen large subcutaneous abscesses. Their occurrence is generally late, progressive, and almost silent, and this latency is extremely remarkable, the patient generally calling no attention to their presence until an advanced stage. The large subcutaneous abscesses are situated most usually on the external surface of the thigh or the posterior surface of the arm, but they are not unusual on the calf, the anterior or posterior thoracic wall, and even in the abdominal parietes.

The pathology of these abscesses is multifarious. Sometimes they are the result of septic punctures, inasmuch as the grave general state of these typhus patients demands numerous injections of substances such as oil of camphor. But although a lapse in asepsis may possibly sometimes explain the formation of such abscesses it must not be forgotten that the patients are suffering from streptococcal septicæmia; and it is reasonable to assume—Danielopol

insists on this point—that large doses of oil of camphor, injected and absorbed, as they are, very slowly, play the part of fixation abscess, the streptococcus being nearly always recoverable from the pus of the abscess. Finally, abscesses are often seen to develop at the sites of old punctures.

The clinical course of these abscesses is slow, this being one of their most typical characteristics. They come thus to acquire enormous dimensions, forming large fluctuating pockets under the skin, occupying, for instance, the whole length of the thigh and separating two-thirds of the integument. On their surface the skin, slightly raised it may be generally appears normal, without redness, without heat, without pain, without œdema. Palpation gives a true sensation of fluctuation, because the pus, being under little or no pressure in the large sac which it does not distend, is easily displaced. It is not unusual to see successive pockets communicating by narrow orifices, which permit fluid to be pressed from one into the other.

When one of these large abscesses is opened a quantity, often considerable, of thick, greenish-yellow pus flows away under very slight pressure. It is then observed that the walls of the cavity are formed on the surface by the skin, in the depth by the aponeurosis, the surfaces of which are hidden by sanious débris of cellular tissue. At an earlier stage, a smaller quantity of pus may be found, but instead a true areolar infiltration of subcutaneous tissue, forming an infinite number of little purulent foci which later become joined into one by destruction of the connecting fibres.

Examination of pus films reveals numerous polymorphous, more or less destroyed according to the age of the lesion, a large proportion of macrophages and, nearly always, chains of streptococci. Generally these large abscesses are sub-aponeurotic, and we have seen much more rarely total phlegmon of a limb; the latter is generally of fatal prognosis. The large superficial abscesses develop progressively, and, if not treated, reach considerable proportions. Generally, after surgical opening they recover perfectly.

Treatment is simple. Dehely and Zislín have published on this subject communications read before the Medical Society of Jassy. It is necessary under local or general anaesthesia to open completely the purulent sac. But it is not sufficient to evacuate the pus and to drain as for an ordinary abscess. Such a practice is followed by interminable suppuration. It is necessary, after opening the sac, to evert the edges and energetically to curette the walls, in order to clear from them the granulation tissue and all the detritus of adherent connective tissue. Then, according to circumstances, the wound may, following the practice of Dehely and Zislín, be left widely open and irrigated with Dakin's solution; with secondary closure after disinfection has been obtained, or immediate partial closure may be performed, Carrel's tubes being left in to irrigate the partially closed cavity. These two procedures have both given us excellent results. But it is not exceptional to see, even after extensive and complete operation, the infection spread upwards and downwards, necessitating new incisions.

It must be added that these streptococcal abscesses are particularly difficult to disinfect, and in a certain number of cases we have had to leave them to cicatrise spontaneously without any attempt at secondary suture.

VII. Gangrene.

Of all complications following exanthematic typhus gangrene seems to be the only one which can rightly be credited to the still unknown pathogenic agent of this infection; no absolute proof of this assumption can be furnished so long as this infecting agent has not been recovered from the wall of the obliterated arteries, or from the clot contained in them.

Gangrene due to *obliterative arteritis* is relatively frequent in the course of epidemics of typhus, and we have seen it in a large number of cases; but here the variety of adjuvant causes which we have found as the basis of other complications must be taken into consideration. Of these gangrenes three classes may be distinguished.

The first includes *gangrene localised to the points of pressure*, which leads to confusion with bed-sores.

The second includes *gangrene of the lower limbs*, and particularly of the feet, the pathology of which is still somewhat in doubt, inasmuch as it is difficult to decide the effect exerted on the arteries by the typhus infection, by secondary infections and by a third adjuvant cause—the cold. We are convinced that much of the gangrene of the feet sent to us

as a complication of typhus was nothing more than frost-bite, supervening in convalescents who during a rigorous winter had to travel far, insufficiently clothed, in unheated trains or on trucks, and along roads covered with snow.

A third class includes *gangrene localised to one part of the body*, generally attacking the integument only, but affecting also the muscles and deeper tissues. One particularly frequent localisation is the scrotum; gangrene may attack it at one localised point, or may invade the entire scrotum, threatening the testicles. On the thorax, the trunk, or the arms, small patches of necrosis were seen, sharply localised and coexisting with marbling, a very characteristic combination. Granted the affinity of the still unknown germ of typhus for the vascular system, these lesions might well be thought to belong to the typhus infection. The course was generally simple; the marbling disappeared steadily and the small necrosed patches were cast off, leaving more or less deep ulcers which cicatrised progressively.

Bed-sores, which were extremely frequent, possessed no special features. Their number, extent, and depth are an indication of the more or less precarious state of the subject.

Gangrene of the limbs is seen nearly exclusively in the lower extremities. We have received nearly all such patients at an advanced period and in a state of dry gangrene. Most often the gangrene involved the toes, fairly often the ankle, and sometimes spread upwards to the middle part of the leg. The general condition was always very precarious, the lesion presented all the characters of dry gangrene, the necrosed parts were black, hard, separated from the healthy parts by a line of demarcation. The patient, emaciated, shrivelled, often moribund in appearance, sometimes complained of pain of a neuralgic character; the temperature was generally subnormal, oscillating around 36° C. Throughout the time of our stay at Jassey we had to treat a considerable number of cases of gangrene and came to the conclusion that surgical measures should be as conservative and cautious as possible, avoiding every routine and text-book operative measure, particularly the cutting of flaps, which generally led to disaster or to bad functional results. On the one hand, the patients were in a state of equilibrium so unstable that it was impossible for them to undergo a serious operation, and, on the other, the tissues were so deeply infected, even beyond the apparent lesions, that the bistoury might always reveal infections of extreme gravity. We therefore adopted the following technique. When patients suffering from gangrene of the lower limbs arrived the gangrenous part was covered for some days with antiseptic wrappings of formol, alcohol, or Dakin's solution, and, first and foremost, we set ourselves to build up the general condition with good food, injections of serum, of sparteine, of adrenalin, and the like. Then often without the need of an anæsthetic, the necrosed parts were cut off just below the line of demarcation in such a way as not to result in bleeding. Thus relieved of the focus of septic absorption the cut edges of the amputations were irrigated for several days by means of Carrel's tubes. Generally the state of the patient improved progressively; we were then able at a second operation, under light narcosis or spinal anæsthesia, to set the stump in order. But here again the greatest prudence was necessary. The actual operation often led to a lighting up of grave microbic infection, because these foci nearly always still contained streptococci. For the toes, we contented ourselves, after circular incision of the integument just at the level of the lesion, with dividing the bone with the chisel about a centimetre or so above the skin incision, which led sometimes to the subjacent articulation. The result was a series of small circular stumps which cicatrised slowly after suppurating for some time, for it was necessary to abstain from any form of suture. When the lesion involved the ankle the technique was the same and just as conservative. Excellent functional results were obtained by practising simple transverse amputations of the foot without troubling about lines of articulation, and, above all, without cutting flaps, which are bound to suppurate, or often to slough, and which involve much greater sacrifice of tissue.

On the other hand, during long expectant treatment we often saw lower limbs recover which presented total gangrene of the ankle and islets of a superficial gangrene spreading up the heel and even on to the leg, accompanied by redness, lymphangitis, and oedema. A rapid operation, without counting its gravity, necessitated a large and useless excision, for having sacrificed only the actually necrosed parts, the alarming symptoms were seen to pass off, the

integument took on a normal appearance, and the islets of superficial gangrene progressively cicatrised. It was thus possible to practise secondarily very conservative operations on the ankle, when one might have been tempted to sacrifice the leg by intervening too soon.

VIII. Erysipelas.

To the surgical complications just mentioned erysipelas must be added. Its frequency, known since Marchison and Trousseau as a complication of typhus, is easy to understand, seeing the almost constant presence of the streptococcus in typhus convalescents. Danielopol reported 9 cases among 200 typhus patients.

Its localisation was variable. In some cases it supervened spontaneously, and was then situated on the face, sometimes associated with lymphangitic abscesses. In others—and this fact has struck us particularly—it supervened after surgical intervention, such as incision of the parotid or of phlegmons, but especially after operations designed to adjust the stumps left after gangrene of the lower limbs. As a result of the incision a veritable inoculation occurred whatever antiseptic precautions were taken, and after an incubation period of 3-5 days a typical erysipelas developed which impaired the patient's outlook.

Conclusions.

Most of the surgical complications following exanthematic typhus observed during the epidemic of 1917 in Roumania were suppurative complications due to the micro-organisms of secondary infections, and particularly to the streptococcus.

Streptococcal septicæmia—the point of origin is the bed-sore or the bucco-pharyngeal ulcer—explains all the suppurative localisations which we have had to treat. It seems desirable to make an exception in the case of gangrene, where the obliterative arteritis is possibly due to the still unknown germs of the disease.

The clinical course of all these complications is generally subacute or chronic.

The prognosis is very often grave; this is due less to the local complication than to the seriousness of the general condition and to the exhaustion of the patient. Indeed, most of our typhus convalescents, having reached the extreme limit of physiological resistance and being exhausted by successive illnesses, died from lack of the power to resist a trifling infection.

The treatment must envisage the general condition and the local complication. A first main point is to avoid secondary infection by preventive treatment. For this it is necessary during the acute period of the disease and during convalescence to carry out careful hygiene of the skin and of the food and air passages.

The general treatment often surpasses local treatment. It is necessary to struggle against the condition of physical exhaustion and of extreme physiological want by means of good food, injections of serum, adrenalin, and the like.

The local treatment varies with the particular localisation, it must be carried out in stages, regulated before all by the condition of the patient. General anæsthesia must be avoided as much as possible; when it is necessary it must be brief and cautious.

In the case of suppurative collections, after evacuation of the pus and curetting of the focus in order to eliminate the necrosed tissues we have often employed discontinuous irrigation with Dakin's solution according to Carrel's method, and we have seen operation wounds thus become sterile; we have even gone on to secondary suture, in spite of the presence of the streptococcus. Possibly certain varieties of streptococcus were less virulent, as the attenuation of the general symptoms suggested; perhaps the patients, who were often septicæmic, had acquired a certain degree of immunity. This immunity might, moreover, be accentuated by the employment of antistreptococcal serum.

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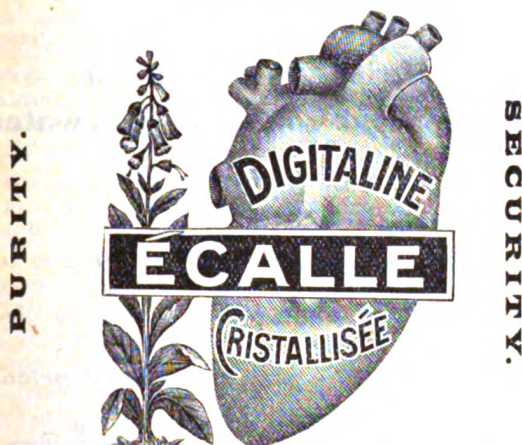
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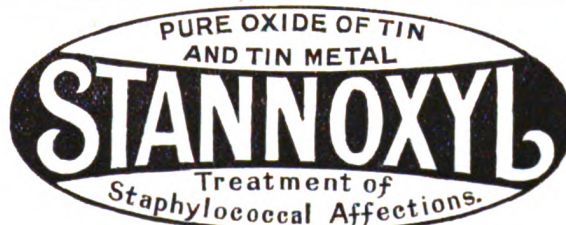


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LONDON: SATURDAY, MARCH 1, 1919.

The Medical Profession and the Trade-Union Question.

A MEETING, following an invitation extended to the medical profession in the metropolitan area, was held on Sunday last at the Wigmore Hall. The meeting was convened by the Council of the Medico-Political Union with the object of passing a resolution for the organisation of the medical profession on a trade-union basis, and such a resolution was carried by a large majority at a gathering whose sentiments on the subject were obvious, and many of whom were committed already to the programme. The time at the disposal of the meeting was largely occupied by statements made in behalf of the resolution, and, though a hearing was given to certain dissentient voices, the very brief period which the chairman was able to allot to each speaker prevented the presentation in any adequate shape of arguments directed against the manifest views of the bulk of the audience: but even so, the majority voters owed a proportion of their preponderating strength to the argumentative, rattling, but reasoned address of Dr. E. H. M. STANCOMB, who came up from Southampton to explain to a London audience how his provincial experience ought to hold good for his metropolitan brethren. We suggest, however, with no idea of belittling the sound sense of his words as a whole or of minimising the force of his main arguments, that in a truly representative audience he would not have escaped some fundamental criticism.

Dr. STANCOMB, speaking, we believe, for the Council of the Medico-Political Union—and seldom were any of his statements or deductions received with dissent in the hall—developed his arguments along familiar lines, and, indeed, referred to the fact that he had made already scores of addresses similar to the one he was delivering. Premising that the medical profession in all attempts to bargain with the State had got the worst of the negotiations, he asserted that the lack of political force among medical men was due to the fact that the politician, necessarily a party man, was not attacked at his only vulnerable spots—viz., party-interest and self-interest. He pointed to the success which had attended the methods of the great trade-unions as a proof that Governments would listen to the organised voice of trade, but paid no attention to arguments or protests presented in any other way. Admitting that the last weapon of the trade-unions had been the strike, he disavowed any intention on the part of the Medico-Political Union to employ such a weapon except in the long last, when, moreover, in no circumstances would it be used against the sick, but only against Government regulations, concerning which a fair hearing had been refused

to accredited medical representatives. The first step, therefore, must be to obtain for the medical profession such accredited representation, when it would follow, or ought to follow, that any bargain entered into with Government by such an accredited body must be adhered to in spirit and detail, unless and until both parties to the bargain were agreeable to variation. The assumption, at this point of the address, was that a medical trade-union could be formed, and be generally accredited; and while the particular audience at the Wigmore Hall seemed to regard the assumption as a perfectly safe one, they cannot in this particular have been representative of the whole medical profession. Dr. STANCOMB dealt in an ingenious way with the allegation that the medical profession would have difficulty in forming an effective trade-union, having regard to the fact that it could not have either the numerical force or the mass influence of the great trade-unions whose influence upon modern legislation has been so marked. He denied that a medical trade-union would be an impotent affair, and, on the contrary, was apprehensive even of the power that would thus be obtained, because a medical trade-union would be, from the very nature of the vocation concerned, protected from the weakness caused by blacklegging. This, of course, is true in the main, for, as a medical man receives five years of intensive study at the expense to himself of £1000 before he can acquire the legal right to practise, substitutes for him cannot possibly be found outside his own ranks. But for this very reason does the trade combination within his own ranks require to be held together by a unanimity that can hardly be hoped for. If all those holding the necessary medical qualifications declined to carry out regulations which they consider to be unfair until their arguments had been properly attended to and their grievances, if proven, had been adjusted, there would be no possibility of any other class taking their place either temporarily or permanently. Thus an effective strike would ensue. But those who follow the profession of medicine have not always the simple issues before them that confront the boiler-maker. The inadequate pay of our calling is generally felt, and there would be the general impulse to combine and to cohere after combination, but more than such an impulse would be necessary to consolidate the working of a medical trade-union.

A trade-union cannot succeed unless it represents substantially a union of those employed in the trade. We are perfectly aware that many trade-unions have within their fold dissentient and substantial minorities, but for practical purposes the members have a common policy which can be easily translated into political activity. The common policy of the medical profession is to benefit the human race, and how to translate this into political activity is in theory and practice, principle and detail, the eternal striving of all good citizens as well as of all medical men. That policy is in existence, is working daily with more force, and now that a Ministry of Health is actually born is the time for speeding its activities. It is, indeed, the

accepted time, because never was the public more ready to back the medical profession than now, and never was there a better chance of obtaining public assistance for the persuasion or coercion of politicians. Victory in the war has been obtained primarily by the valour of our fighting forces, but those forces were kept in being and efficiency by a self-sacrificing, devoted, and able medical service. In times of peace such a service will be as much required as in times of war, and the public is fully aware of this. The public will see in the formation of a medical trade-union a perfectly legitimate course in some directions of medical work, but certainly not in other of the countless places where the medicine of the future will be the mainspring of legislation. Thus the formation of a medical trade-union will be attended by two difficulties: the movement will not receive enthusiastic adherence from all classes of the medical profession, and it will not be supported in entirety by the public for whose benefit it must be guaranteed to exist. We agree entirely with Dr. STANCOMB that an accredited body representing medical opinion ought to be placed in a position to negotiate with Governments upon medical questions, but we do not think that a medical trade-union, despite its obvious advantages in certain important crises, would secure for the medical profession that freedom to work and to develop for the public good which is our common policy. The questions here touched upon should be, and perhaps will be, discussed by the Joint Committee of the English Colleges whose Memorandum on the formation of the Advisory Medical Council under the Ministry of Health Bill will be found in another column. They are also questions which might well be closely debated by such a body as the Medical Parliamentary Committee aspires to become; but that body must be made representative of the various and varying interests concerned before what issues from it can have any political force. Will the necessary co-operation be given to that Committee, as a temporary measure, and in recognition of the fact that no medical body, not even the Royal Corporations or the powerful British Medical Association, separately or in combination, can claim to speak with the common voice of all?

The Prevention of Influenza.

WE are still on the rising side of the third wave of the influenza pandemic and, it is to be hoped, nearing the crest. From the clinical records as yet available the type of disease does not appear to be widely different from that of previous waves except that severe cases, although lamentably frequent, do not form so large a proportion of the total attacks. There is also a wide impression that older people have lost the relative immunity which they at first enjoyed, an opinion, however, not based upon exact figures and possibly having its origin in the invasion of every hitherto safe nook and cranny in the inhabited world. Preventive measures are still being much canvassed, although the situation must soon be profoundly modified by

the exhaustion of all susceptible clinical material. Few countries in the world have failed to issue instructions to their sanitary authorities and warnings to the public, and our own Local Government Board has taken the opportunity of resuming the accumulated experience of the past six months in a Memorandum which has just been widely circulated. This Memorandum, which includes the substance of the letter of advice issued by the Royal College of Physicians of London, is insistent upon the essential need of teaching the individual citizen to realise his duty to the community. The central pivot in the preventive programme is therefore a leaflet of advice to the public which runs as follows:—

1. The golden rule is to keep fit, and avoid infection as much as possible.
2. The way to keep fit is to cultivate healthy and regular habits, to eat good food, and to avoid fatigue, chill, and alcoholism. Healthy living does not of itself ensure against attack, but it makes the patient better able to withstand the complications which kill.
3. The early symptoms of influenza are usually those of a severe feverish cold. Though the actual cause of the disease is unknown, we do know that it is rapid in onset, that it is most infectious in its early stages, and that it is spread by discharges from the mouth and nose, and that it kills mainly by its complications. Every person suffering from the disease, no matter how mild the form, is a danger to others.
4. It is not always possible to avoid infection, but the risks can be lessened by—
 - (a) healthy living;
 - (b) working and sleeping in well-ventilated rooms;
 - (c) avoiding crowded gatherings and close, ill-ventilated rooms;
 - (d) wearing warm clothing;
 - (e) gargling the throat and washing out the nostrils;*
 - (f) wearing a mask† and glasses when nursing or in attendance on a person suffering from influenza.
5. Do not waste money on drugs in the false hope of preventing infection.
6. Those attacked should—
 - (a) go home, go to bed, and keep warm;
 - (b) call in a doctor;
 - (c) occupy, if possible, a separate bedroom or a bed that is screened off from the rest of the room;
 - (d) when coughing or sneezing hold a handkerchief in front of the mouth; the handkerchief should be boiled, or burnt if of paper;
 - (e) use a gargle as described;
 - (f) be careful during convalescence in order to avoid relapse or complications;
 - (g) avoid meetings and places of entertainment for at least one week after the temperature has become normal.

Most of the measures, it will be seen, are based on the now generally accepted dogmas that influenza is to all intents carried exclusively by direct contagion and principally in the form of droplets of infected secretion expelled in the act of speaking, coughing, sneezing, or hawking. The Memorandum attributes a lesser danger to the finer infective particles carried over longer distances by draughts or air convection currents, the virus rapidly becoming attenuated outside the body.

These dogmas suggest a number of rather obvious general measures on which all are agreed, but which, nevertheless, require for their complete carrying out a degree of carefulness on the part of the average citizen which is by no means yet at the command of even the most enlightening local authority. Two special measures merit further discussion, inasmuch as they have been prominently

* The following may be used as a gargle:—A solution of common salt (one teaspoonful to a pint of warm water) to which a few crystals of potassium permanganate are added—enough to make the solution pink.
† The mask, which may be made of gauze (4 layers) or butter muslin (3 layers) should cover the mouth and nose. To protect the eyes it is advisable to wear goggles.

brought before the public in the daily press and are not uncontroverted in medical circles. Face masks, the Memorandum suggests, should be used as much as possible by those attending on the sick, and certain authorities have gone further, especially in America, and have enjoined their general use by the public whilst travelling or exposed to infection in ordinary social intercourse. We do not know on what evidence the influenza mask has been held to be an efficient preventive, but a careful investigation by Dr. LAUTERBURG at the instance of Professor H. SAHLI, of Berne, has shown¹ that the usual mask of commerce in Switzerland is completely permeable for the fine droplets which Professor SAHLI considers to be the principal medium of infection. Dr. LAUTERBURG carried out his experiments with a mask, adapted to a plaster-cast of the face, through which air was aspirated at a pressure carefully regulated to be less than the inspiratory force. A nebulised watery suspension of *B. prodigiosus* passed freely through the mask. In commenting upon this result SAHLI does not deny that the mask may yet serve some purpose by holding back the coarser particles of secretion expelled into the air during the act of coughing. But he holds with the Flüge school that these visible pellets play an infective rôle subordinate to that of the infected droplets which may remain suspended for hours and be carried direct into the alveoli of the lung. Analogy with the cotton-wool plug of the culture tube may, SAHLI thinks, have led observers astray, the conditions being very different in the case of the plug, which is of much denser construction and has no suction on one side of it to draw bacteria through. The kindred observations of his colleague, Professor KOHLSCHÜTTER, suggested that gas masks also failed in their purpose by allowing small particles of moisture charged with poison gas to pass readily the material employed. SAHLI does not discourage the use of goggles and of a kerchief held before the mouth and nose by physicians and nurses for their own protection, stating that such measures have a useful educational influence upon the patient in contrast to the feeling of amazed horror aroused by masked attendants. It would be more reasonable for the patient to wear a mask, but this is impracticable in view of further impeding respiration, which already may be difficult.

The second measure around which discussion centres is the value of preventive inoculation. Since we are uncertain of the primary cause of influenza, so the Memorandum runs, no form of inoculation can be guaranteed to protect against the disease itself. In this connexion SAHLI's well-known distrust of hasty generalisations may lend special weight to his views. The fact of naturally acquired immunity in influenza he holds to be proven beyond doubt, first by the critical fall of temperature which points to the sudden appearance of antitoxic forces in the organism (using the term antitoxic in its widest sense); then by the occurrence of relapses in the strictly isolated patient, who must, in order to relapse, have been harbouring the active virus against which he was in a measure protected; and, thirdly, by the partial immunisation of humanity shown in the long periods between successive pandemics. Young adults have been specially affected by this epidemic both at home and abroad, and SAHLI in accepting this fact for

both the pandemics in his own experience deduces from it that younger people were first attacked owing to the residual immunity retained by the older section of the community. These facts have an important bearing on the rationale of artificial immunisation, while they greatly complicate accurate judgment upon its results. To the relative failure of immunisation against influenza in animals SAHLI does not attach much weight except in deducing from it the unlikelihood of obtaining a really potent antitoxic serum. The vaccine he has employed himself contains 80 million bacilli in the initial dose of 0.1 c.cm. To use a larger dose than this was to run the danger of provoking the disease by inducing a negative phase in subjects already exposed to infection, but this limitation he finds unfortunate, as it is only the large dose which confers a high degree of immunity when the immediate risk of infection is not present. One interesting and apparently forgotten observation by Dr. JULIUS GOLDSCHMIDT may be recalled from the previous epidemic—namely, that in the island of Madeira revaccination against small-pox protected the population very materially against a simultaneous epidemic of influenza. It is quite evident that the inoculation method requires and deserves all the attention which can be given to it. Experience is accumulating rapidly in many countries, and the results when obtained and collated should be available for use in the next pandemic if preventive medicine has not by then forestalled the need for it.

The French Supplement to "The Lancet."

THE article in the French Supplement in our present issue on the Surgical Complications following Exanthematous Typhus, raises once more the interesting question of mixed infections. Quite apart from the fact that the terms mixed infection and latent infection are not clearly defined bacteriologically, and are consequently used in a vague sense, the question of symbiosis is likely to become one of importance in the near future. Dr. PAUL MOURE and Dr. ETIENNE SORREL discuss the problems as they may be associated with the presence of tubercle bacilli and pyogenic cocci in an infective disease of doubtful bacteriology; whilst the prevailing influenza epidemic is now daily raising similar etiological difficulties in yet another direction. Bacteriologically there are as yet very few facts to generalise upon. Extensive observations are needed upon pleomorphism, pathogenicity and susceptibility, classification and nomenclature. In the meantime we must fain rest content with an interim view that certain so-called zymotic diseases, and amongst them typhus, measles, and whooping-cough, diminish the resistance of the human body to pathogenic organisms such as the tubercle bacillus and the pyogenic cocci. Quite a number of similar examples might be chosen at random from the epidemiological history of the present war. After all, it was but another aspect of this same subject, the identity of infective disease, which called forth Sir WILLIAM JENNER's famous remark that the voice of Nature could only be heard "by patience and daily watching, by keeping honest record of every sound she uttered—by joining letter to letter, adding word to word and line to line."

¹ Correspondenz-Blatt für Schweizer Aerzte, Feb. 15th, 1919.

Annotations.

"Ne quid nimis."

ACUTE INFECTIVE POLYNEURITIS.

How the discovery of a new technique may be fruitful in many directions is exemplified in the case of a research described under the above title in the current numbers of the *Quarterly Journal of Medicine* by Major-General Sir John Rose Bradford, Captain E. F. Bashford, and Captain J. A. Wilson. The successful cultivation by the Noguchi method of the "filter-passer" globoid bodies, which are regarded as the causative organism in acute poliomyelitis, led the authors to employ the same method in the case of other diseases. As stated in their communication to THE LANCET of Feb. 1st, they have been successful by this means in cultivating organisms from cases of acute infective polyneuritis, trench fever, influenza, nephritis, mumps, measles, rose measles, typhus, and encephalitis lethargica, which, in the case of the first four, they have shown to produce these diseases when injected into animals, and which are recoverable from those animals while suffering from the maladies thus caused. During the campaign in France and Flanders a group of cases with generalised palsy of a peculiar character has been recognised. In most of the cases three stages in the disease can be observed:—(1) An initial illness; (2) a period of latency; (3) a paralytic stage. The initial illness consists of moderate pyrexia, headache, vomiting, and pain in the back: occasionally sore throat and pains in the limbs. These symptoms disappear in a few days. The period of latency seems to be variable, in many instances lasting but a few days, in some four to six weeks, while in others the paralysis appears to be the first manifestation of the disease. The paralytic stage may occur suddenly, but is generally ingravescent and accompanied by paræsthesiæ of the extremities. The main peculiarities of the palsy are that the legs are affected as a whole—i.e., there is no picking out of individual muscles as in poliomyelitis, but the proximal is usually more affected than the distal part of the limbs; the arms and muscles of the trunk are always affected, while palsy of the facial muscles, which is bilateral and occurs later in the disease, is most characteristic. Paralysis of the third nerve was not observed at all, and palatal palsy was very rare in the series of 30 cases studied. The objective sensory changes are usually relative in degree and have a glove-and-stocking distribution. The deep reflexes are abolished, while sphincter control is not profoundly affected and may remain normal up to the end even in fatal cases. No cerebral or mental symptoms are recorded. The blood shows a moderate leucocytosis and the cerebro-spinal fluid exhibits no abnormality. The mortality is high—8 out of 30 cases—half the deaths occurring within a week of the onset of the paralysis and being due to respiratory failure. Recovery is slow but complete, the facial muscles often being the first to show improvement. Macroscopic examination post mortem is negative. Microscopically the lesions found are: (1) acute neuritis in the nerves, particularly the large trunks; (2) scattered minute hæmorrhages, diffuse round-celled infiltration, and degeneration of nerve cells in all parts of the grey matter of the cord, medulla, and brain. Captain Bashford states that "consideration of the whole pathological process would point to a septicæmia or systemic poisoning, which enters

the central nervous system by way of the nerve trunks, both motor and sensory, and is probably of an infective nature." The accuracy of this last statement is proved by the results of subdural inoculation of monkeys with emulsion of human spinal cord preserved in glycerine. The animals developed a disease identical with that observed in man, and inoculation of further monkeys with material from those affected was also successful.

All attempts to cultivate the organism by ordinary methods failed, but success was attained by employment of the technique of Flexner and Noguchi. Captain Wilson states that "the conditions of growth, whether a primary culture or subculture is in question, are of a strictly limited character, and remains so." The organism is similar to the globoid bodies of poliomyelitis in its general features, appearing as a rounded, oval, or kidney-shaped body measuring 0.2 to 0.5 μ in diameter, presenting a darkly stained, rounded spot, which is surrounded by a narrow faintly stained area. But it differs in several minor characters and crucially in that "the organism isolated from cases of polyneuritis inoculated subdurally into monkeys produces a disease which is clinically and pathologically distinct from anterior poliomyelitis, a disease which is identical with that from which it was obtained." Sir John Rose Bradford points out that, "in the presence of these facts, the conclusion would seem to be justified that so-called acute febrile polyneuritis is really a malady allied to, but quite distinct from, poliomyelitis. The conclusion would entail as a corollary that the virus of poliomyelitis, instead of being an isolated and peculiar virus, is really one member of a class of organisms, and that the virus of polyneuritis is another, but distinct, member of this class." In view of what has been already achieved by the application of the new cultural methods, such words appear to us to open up a vista of immense possibilities in the not too distant future.

EPIDEMIC "FOOD POISONING."

IN the spring of 1918 an outbreak of "food poisoning" occurred in a military dépôt in France. The opportunity thus offered for a combined epidemiological, clinical, and bacteriological research was not missed, and a report on the investigations, which were carried out by Captain H. M. Perry and Captain H. L. Tidy, has been published by the Medical Research Committee,¹ and constitutes a valuable contribution to our knowledge of the subject of "food poisoning" in general. Outbreaks of "food poisoning" are not of uncommon occurrence, and a number of such epidemics have been investigated in detail in different countries. In all of them the clinical features have been similar, whilst the general characteristics have been the simultaneous development of symptoms and their limitation to persons who have partaken of some particular article of food. The epidemic under consideration varies in that while the infection was conveyed through the consumption of food, after the initial outbreak subsequent cases occurred extending over a prolonged period.

Now bacteriological investigation of the food-stuffs and of the "poisoned" individuals in epidemics occurring during the past 30 years has led to the incrimination as causative agents of an interesting group of bacteria, two members of

¹ A Report on the Investigation of an Epidemic Caused by *Bacillus arthrycke*, Medical Research Committee, Special Report Series, No. 24. 1919. 9d. net.

which, the *Bac. enteritidis* of Gaertner and the *Bac. aertrycke* of Durham and De Nobele, are most usually at fault. The epidemic with which Captain Perry and Captain Tidy had to deal was due to the latter bacillus. There is still divergence of opinion as to the relations of the organisms of this "salmonella" group to each other and to those of allied groups, and not the least interesting feature of the report is that the authors are able to produce evidence demonstrating not only the possibility but the desirability of differentiating between these bacteria. Of prime importance to the medical reader is the establishment of the fact that "food poisoning" may not only be caused by the consumption of food in which active toxins are present, but also by an actual bacterial infection directly attributable to the ingestion of food contaminated by a "chronic carrier." The report is worthy of careful perusal alike by the epidemiologist, the clinician, and the bacteriologist. Not only is it informative, but it contains much that is suggestive, more especially as to the relationship between "food poisoning" and other forms of enteritis. Whilst drawing the attention of our readers to the report, we venture to congratulate Captain Perry and Captain Tidy on an accomplished piece of work.

TWENTY YEARS OF PLAGUE IN INDIA.

INDIA for some years has been by far the most important reservoir of plague infection in the world. Much of our knowledge of the disease has been gained by investigations in that country, and any report on the subject that comes from India is especially valuable, the more so if it is furnished by an expert. A recent report of great interest has been supplied by Major F. Norman White, C.I.E., Sanitary Commissioner with the Government of India,¹ giving details of the annual epidemics of plague in India during the past 20 years. As is known, the disease was brought to Bombay in the autumn of 1896, but it was not until 1898 that it became more widely diffused outside that province. Like other eminent Indian epidemiologists, Major White adopts, not the calendar year, but "the plague year," which begins in July and ends in June of the following year. As July is the month of the smallest incidence of plague in India, it forms a suitable starting-point for tracing the annual curve, which, rising in the latter months of the year, attains its maximum in the following March and April, and falls rapidly in May and June. From July 1st, 1898, to June 30th, 1918, more than 10½ millions of people died from plague in India. The four most serious epidemics were: (1) in 1904-5 when 1,328,249 fatal cases were recorded; (2) in 1906-7 when there were 1,286,513 deaths; (3) 1903-4 when 1,138,451 persons died; and (4) 1917-18 when 820,292 deaths occurred. The two mildest outbreaks were: (1) in 1898-99 when 119,045 fatal cases were reported; and (2) in 1908-9 when 126,442 deaths were registered. The three Indian provinces which experienced the worst ravages of plague were the Punjab, which during the 20 years lost 2,992,166 of its population from the disease; the United Provinces of Agra and Oudh, which lost 2,386,332; and the Bombay Presidency, which lost 2,295,221. Some parts of India have suffered but little from the scourge, and it is stated that the districts which have practically escaped have been

mainly the rice-growing areas, the worst sufferers being the wheat-growing districts. It is suggested that in rice-growing districts comparatively little grain is imported from other localities, and that the facilities afforded by the movement of grain for the transport of the infection (by infected rats and their fleas) explains the difference to some extent.

Major White draws attention to varying intensity of plague epidemics in different localities and in different years. In this connexion he refers to the investigations of the Plague Research Committee, which showed that the severity and diffusibility of plague outbreaks in certain areas appear to depend upon conditions of atmospheric humidity, which in turn depend on rainfall. Humidity in excess of the normal at certain seasons of the year is beneficial to the rat flea in all stages of its development; and a flea population in excess of the normal appears to be essential to plague epidemics of more than average intensity. Major White thinks that there is some evidence of a diminished virulence of the plague infection in certain localities, and the suggestion is made that this may be due to an increasing immunity of the rat population. But this immunity of the Indian rat cannot be said to be by any means general, and it is probable that a long time will elapse before a marked decrease of plague in India from this cause will become apparent. In the *Times* recently an optimistic writer discussing this question stated, "there are now perceptible signs that the periodical epidemics are permanently abating in virulence." But the latest available figures, those above mentioned for 1917-18, relating to India as a whole, hardly support this too sanguine opinion, as that outbreak, the worst that had occurred for 10 years, caused the deaths of 820,292 persons. It is unlikely that the plague-mortality in India will become permanently reduced until public health administration, especially in the rural districts, has been placed upon a better footing. It is satisfactory, however, to learn that steps in this direction have already been taken, but much more remains to be done.

OCCUPATIONAL FRACTURES.

WE are accustomed to hear much about diseases of the skin due to the occupation, and various diseases, such as lead poisoning, are also classed together as caused by the trade or business; but it has not been so well recognised that there are certain fractures which are almost, if not entirely, due to the work which the sufferer has been doing. Last week we published a paper by Lieut.-Colonel A. L. Johnson, C.A.M.C., which describes a highly interesting form of fracture of the humerus caused by a blow from the propeller of an aeroplane. The author had seen four cases of the condition and in each instance there was a fracture of the right humerus a short distance above the condyles. The fracture was compound, and the wound and the fracture were both caused by a blow from the blade of the propeller from a premature starting of the engine before the mechanic, who was "swinging" the propeller, could get out of the way. It certainly deserves to be classed with the occupational fractures. Many motorists are painfully aware of the very analogous fracture which arises from the back-fire of a motor engine when starting, or sometimes it may be caused from the handle striking the wrist. This "chauffeur's fracture" affects the radius near its lower end, but the exact site varies, and now

¹ Twenty Years of Plague in India, with Special Reference to the Outbreak of 1917-18. Published in the Indian Journal of Medical Research, vol. vi., No. 2.

that self-starters are becoming common the lesion is growing rarer. The war has led to the production of a new form of fracture of the humerus. When hand-grenades were first introduced many men endeavoured to throw them as if they were cricket balls, forgetting that their weight was much greater. The momentum caused by the weight of the grenade was in many cases sufficient to cause a curious spiral fracture of the bone. The same kind of fracture has been met with but very rarely as a result of the throwing of a cricket-ball, and it is quoted in the text-books as an example of a fracture caused by muscular action. The spiral fracture of the fibula which is sometimes sustained by the inexperienced performer on skis also belongs to this class. We may take it as certain that any new industry or sport is likely to give rise to some new form of disease or injury, and the latest of these is the propeller fracture.

THE RESTORATION OF GLYCERINE AND OTHER MEDIA TO THE PHARMACOPEIA.

At its meeting on Feb. 24th, 1919, the Executive Committee of the General Council of Medical Education and Registration, having considered the advisability of withdrawing the temporary alterations in the British Pharmacopœia published during the war, and arising out of the scarcity of sugar, glycerine, and certain oils and fats, adopted the following resolution:—

"That the Executive Committee, on behalf of the Council, order and direct that, on and after April 30th, 1919, the British Pharmacopœia, 1914, shall be altered and amended by revoking and withdrawing the alterations and amendments made and published in the *Gazettes* of July 27th, 1917, and March 29th, 1918; and that formal intimation of such revocation and withdrawal be published according to law in the *Gazettes* of London, Edinburgh, and Dublin, on April 30th, 1919."

This resolution will be welcomed and a word of praise may well be accorded to those authorities who issued instructions as to how glycerine and other media could be replaced in official preparations. As a temporary measure the inconvenience caused by the restrictions was not so serious as some anticipated. From time to time we have published notes as to how glycerine and sugar could be spared by the use of substitutes, which in the majority of cases could be made to serve the same purpose. While this information was useful there is little doubt that a return to the classic excipients will be appreciated.

LOUPING ILL.

SEVERAL investigations have recently been carried out on this disease in sheep, but little progress made in its prevention. In the last number of the *Journal of Comparative Pathology and Therapeutics* Sir Stewart Stockman, of the Board of Agriculture and Fisheries, discusses the rôle played by ticks in the production of louping ill. Particulars are given of 101 experiments conducted by the Board with a view of throwing light upon the cause, nature, and course of the disease. Sir S. Stockman is not inclined to think that the complaint in sheep has any close relationship to poliomyelitis in human beings. The disease is definitely tick-borne, and the infecting agent is not a toxin. It is transmitted by larval ticks (*Ixodus ricinus*) from females which have been feeding on the blood of infected sheep. It was also produced by adult ticks which had been fed as nymphs on infected animals and by inoculation of gland juice and blood from such animals. Arrangements are being made to test the practical

value of protective inoculation in the case of adult sheep brought on to farms for the purpose of re-stocking, as well as in lambs born on the farms. The eradication of the tick suggests itself as one way of preventing the disease, and an intensive study of the life-history of the parasite is obviously a preliminary to the framing of an appropriate campaign.

THE TOLL OF INFLUENZA.

THE recrudescence of the influenza epidemic is brought home to us this week by the fact that we have to regret the death of Major H. Graeme Gibson, R.A.M.C., whose paper, in coöperation with Colonel S. L. Cummins, A.M.S., on Tetanus in the British Army appears in this issue of THE LANCET. Again, only last week we published an interesting article on the blood-supply of muscles, with reference to war surgery, by Captain J. Campbell, R.A.M.C., and Captain C. M. Pennefather, R.A.M.C., and we regret to say that while the proofs were in his hands for correction Captain Campbell died at a nursing home in Liverpool. Mr. Harry Blakeway's untimely death while acting as resident assistant surgeon to St. Bartholomew's Hospital is a calamity to the hospital which he served so well, and a sad loss to the review columns of THE LANCET, where his wide reading and clinical experience made him a valued coadjutor.

THE MARRIAGE-RATE OF SOUTH AUSTRALIA.

THE Annual Report for 1917 of the Registrar-General for South Australia, Mr. Adrian J. Korff, has just been issued, and among the outstanding features of the report the following may be noted:—

"The number of marriages showed a considerable falling off, and was very much below the average of the last 10 years, and the marriage-rate also declined to a figure lower than that of any year since 1906.

The fall in marriages was reflected in births, which also stood at a low figure for the year, being nearly 1000 less than the average of the preceding five years.

The infantile mortality-rate for 1917 was very favourable, the proportion of deaths of infants to 100 births registered was the lowest ever recorded, and was very serviceable in balancing the decline in the birth-rate.

The death record was much below the average, and the death-rate was the lowest for the last six years."

Owing, however, to the small number of births, the natural increase for the year 1917 was considerably under the average, and the sex proportion of those births presents some interesting features.

"Of the total births registered, 5762 were male and 5564 female, the proportion of the former to 100 of the latter being 103.56. The Commonwealth ratio in 1917 was 105.26, and in England, according to recent returns, the proportion for the five years ended with 1916 was 104.0. In the last annual report I stated: 'The proportion in 1916 for South Australia was unusually high, and at first sight might seem to give support to statements which have been made that the rate of male to female births is increased in time of war; but it may be pointed out that 109.60 is not by any means a record for this State—in two successive years, 1887 and 1888, the proportions were 109.70 and 109.82, while in 1903 the high total of 111.29 was reached. The average decennial rates for the last 30 years were: 1887-1896, 104.78; 1897-1906, 105.62; 1907-1916, 105.43, the decade including the two war years 1915 and 1916 taking only second place in the averages."

As the proportion of male births for 1917 (103.56) was very much lower than that of any of the four preceding years, and was below the average of the 14 years 1904-1917, the female predominance in South Australia is very marked.

Sir Nestor Tirard has been appointed Consulting Physician to King's College Hospital, and has been elected Emeritus Professor of Medicine by the Council of King's College, London.

THE MINISTRY OF HEALTH BILL.

THE ACTION OF THE GENERAL MEDICAL COUNCIL.

THE Executive Committee of the General Medical Council, at its meeting on Feb. 24th, considered a communication from the Lord President of the Privy Council inviting its observations on the Ministry of Health Bill, 1919, of which he forwarded copies.

The Committee, on behalf of the Council, authorised the President to forward the following resolutions on the subject to the Lord President, for communication to the Government:—

1. That the Executive Committee observes with regret that the Bill does not extend to the whole of the United Kingdom, as was urged in the resolution of the General Medical Council of Nov. 30th, 1918, and that the Executive Committee presses on the Government the importance of introducing legislation corresponding to that proposed for England and Wales, and for Scotland, appropriate to the special conditions obtaining in Ireland.

2. That the Memoranda No. 1 and No. 2, laid before the Executive Committee by the Irish Branch Council, be transmitted to the Lord President for his information.

3. That in view of the very varied medical functions devolving on the Ministry of Health in Scotland, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons engaged in health services, the Executive Committee is of opinion that not less than one-third of the members of the Scottish Board of Health should be persons who are registered under the Medical Acts.

4. That the Executive Committee welcomes the introduction into the Bill of Clause 3 (2) (d), whereby the powers and duties relating to public health, now exercised by Government departments other than those expressly mentioned, may by Order in Council be transferred to the Ministry of Health; and that it is desirable that the General Medical Council should before they are issued have an opportunity of considering the several draft Orders in Council so contemplated for the transfer of such medical powers and duties.

It was decided that these resolutions should be communicated to the Lord President of the Council, with a request that he would be pleased to transmit them to the Government.

CONJOINT ACTION OF THE ENGLISH COLLEGES.

Early in July last the Royal College of Physicians of London and the Royal College of Surgeons of England appointed a Joint Committee with power to coopt other members, whose duty it should be to place before the Government the conditions conceived to be essential in a Ministry of Health Bill.

The members of the Joint Committee are: Dr. Norman Moore (President of the Royal College of Physicians), Sir George Makins (President of the Royal College of Surgeons), *Lady Barrett, M.D., Sir John Broadbent, Sir Bertrand Dawson, *Dr. Herbert French, *Dr. W. H. Hamer, Sir Robert Jones, *Dr. H. R. Kenwood, Sir Berkeley Moynihan, Dr. J. A. Ormerod, *Dr. John Robertson, Mr. Charles Ryall, and Mr. H. J. Waring. Mr. F. G. Hallett is acting as secretary and the coopted members names are marked with an asterisk. The Home Secretary, now Viscount Cave of Richmond, with other members of the Home Affairs Committee of the War Cabinet, on July 29th received a deputation which submitted certain proposals, including the appointment by the Minister of an advisory body specially qualified to consider medical questions, the right of such body to meet frequently and to have direct access to the Minister, the equal representation on that body of curative and preventive medicine, and with a view to providing that the best opportunities for the prevention of disease and for the maintenance of health should be available for every member of the community.

A Memorandum just issued by the Joint Committee runs as follows:—

The Committee considered at many meetings the conditions it conceived to be essential to any scheme for setting up a Ministry of Health, in so far as it concerned England and Wales; it was considered that the profession in Scotland and Ireland would more fittingly deal with those portions of the United Kingdom.

While realising the difficulties there would be in gathering together the health departments at present scattered through

various ministries under one head and effecting disentanglement from the Poor-law, the view was strongly held by the Committee that if the Health Ministry is to take a wide outlook and be as little restrained as possible by established tradition and habit, it should not be more associated with any existing Government Department than is absolutely necessary to secure efficient organisation. In the opinion of the Joint Committee the aim of any sound health policy must be to render available the best opportunities for the prevention of disease and the maintenance of health for every member of the community.

Considering that a large proportion of the work of the Health Ministry, both as regards its policy and its execution, will depend on the knowledge and coöperation of the medical profession, the Joint Committee considered it essential that there should be appointed by the Minister of Health an Advisory Medical Council, drawn from every section of the profession, such Council to have direct access to the Minister, and the power to initiate advice.

Since there will probably be other advisory councils besides the Medical Advisory Council, the Joint Committee are of opinion that there should be a connecting committee in the Ministry for the correlating of the work of the Advisory Councils in order to prevent overlapping and conflict of advice.

The Medical Advisory Council, to be of real use to the Minister, and through him to the nation, must be of limited size—say, 21 members. It cannot, therefore, be representative of the members of the medical profession in the Parliamentary sense. Its members must be not only individually excellent, but such as will together constitute a good council of advisers.

To this end the Joint Committee laid down the principle that in selecting the members of this Council greater regard must be had to special attainments and experience than to interests and organisations as such.

Subject to this primary aim, an endeavour should be made to represent the individual members and the corporate life of the profession.

The Memorandum adds that the Joint Committee were later received sympathetically by the then Minister of Reconstruction, Dr. Addison, when explaining and urging these views. Conferences between the representatives of the Joint Committee of the Royal Colleges and the representatives of similar committees of the Royal Society of Medicine and the British Medical Association have been held for the consideration of these important questions relating to the proposed Ministry of Health. At these conferences there has been substantial agreement, a fact of great importance in view of the large body of medical opinion these three bodies together represent. The Joint Committee will continue their deliberations with a view to helping in the formation of a sound national health policy.

PROPOSED EXTENSIONS OF THE INSURANCE MEDICAL SERVICE.

HAVING practically completed the examination of the present conditions of service, and possible modifications of them, as regards the duties of insurance practitioners (subject to the present limitations of the scope of services provided) the Commissioners and the Conditions of Service Subcommittee of the Insurance Acts Committee were proposing to proceed, in their Twelfth Conference on Feb. 6th, 1919, to the consideration of possible extensions of the scope of service, including both those new services for which grants were voted by Parliament in August, 1914,¹ and any other extensions that might appear desirable.

It had been agreed, both by the Commissioners and the Insurance Acts Committee, that a satisfactory examination of this subject would not be possible unless there were present to take part in this portion of the discussions an adequate number of physicians and surgeons and other medical practitioners representing types of experience specially involved in the subjects now to be discussed, and not included in the membership of the Conditions of Service Subcommittee.

With this object the Commissioners, with the concurrence of the Insurance Acts Committee, invited on this occasion

¹ (i.) Medical referees and consultants, with travelling expenses of insured persons presenting themselves for examination. (ii.) Provision of specialist consultations in connexion with the treatment of insured persons. (iii.) Grants in aid of the equipment and maintenance of clinics for the use of insurance practitioners. (iv.) Grants towards the provision of nursing for insured persons. (v.) Grants towards the provision of pathological laboratories.

the attendance of the following individuals, each of whom attended in a personal capacity only and to take part in the discussions, not to formulate definite conclusions: Dr. Norman Moore; Sir George Henry Makins; Mr. H. A. Ballance, late member of the Norwich Insurance Committee; Lady Barrett, M.D., late member of the London Insurance Committee; Dr. R. A. Bolam, member of Northumberland Insurance Committee; Dr. G. S. Buchanan, one of the medical officers of the Local Government Board; Sir Bertrand Edward Dawson; Dr. A. Free and Fergus; Dr. A. Fulton, Vice-Chairman, Nottingham Insurance Committee; Dr. H. R. Kenwood, President of Society of Medical Officers of Health; Dr. E. J. Maclean, late Chairman Cardiff Insurance Committee; Sir Berkeley G. A. Moynihan; Dr. Lauriston Shaw, member London Insurance Committee.

The members of the Conditions of Service Subcommittee are as follows: Dr. H. B. Brackenbury (chairman), Dr. T. Ridley Bailey, Dr. H. G. Cowie, Dr. H. G. Dain, Dr. J. R. Drever, Dr. E. R. Fothergill, Dr. P. V. Fry, Dr. S. Hodgson, Dr. A. Linnell, Dr. H. L. Rutter, Dr. J. P. Williams-Freeman, and Dr. Alfred Cox (medical secretary) and Dr. James Neal (deputy medical secretary) of the British Medical Association.

It was agreed that (without prejudice to such modification as might appear in the course of discussion to be desirable) the whole subject matter should be considered under the following heads:—

- I. The additional services which should be provided.
- II. The practitioners by whom these services should be rendered.
- III. Persons not medically qualified who assist the practitioner—for example, nurse at operation.
- IV. Premises and equipment.
- V. The scheme of organisation into which the foregoing should be fitted.

Head I. being subdivided as follows:—

- (a) Expert "out-patient" medical services.
- (b) General practitioner services not at present available—for example, attendance at confinements, practitioner clinics.
- (c) Laboratory facilities.
- (d) Referees and supervisory medical officers.
- (e) Ancillary services of skilled persons not medically qualified—for example, masseurs.
- (f) Treatment in residential institutions (as in-patients).

This extended conference, just as in the case of the conferences between the Conditions of Service Subcommittee and the Commissioners concerning the present conditions of the existing Insurance Medical Service, is for deliberative purposes only; no decisions will be made by it. The purpose intended to be served is that of bringing together two different kinds of experience and points of view—namely, the public and administrative side and that of the medical profession, respectively, for exploring in advance the various questions which must necessarily or may advantageously arise in the consideration of any future revision of the terms and conditions of insurance medical service or extensions of the service, so that the ground may be cleared and the task of actual revision, when the time for it arrives, facilitated. For the furtherance of this purpose a report will be issued in due course.

CONTROL OF VENEREAL DISEASES.

Comprehensive Programme of the National Council.

At a meeting of the National Council for Combating Venereal Diseases recently held at Edinburgh, with Sir Thomas Barlow in the chair, the following resolutions were passed:—

1. That the Local Government Board should authorise the appointment of whole-time venereal officers (a man and a woman) on the staffs of the medical officer of each county or county borough. (The women could usually combine venereal and infant welfare work.) That the present hospital accommodation should be supplemented by "ad hoc" clinics under the supervision of such venereal officers in every town of over 10,000 inhabitants and also in the county boroughs, such clinics to be open for continuous and early treatment both for men and for women, and visited at frequent intervals by the venereal officers, who should be empowered to call in practitioners resident in each locality to assist them. It is suggested that a subcommittee of clinical assistants could be given to a resident practitioner in each centre, who would supervise the continuous and early treatment in the intervals between the visits of the venereal officer.
2. That hospitals and medical schools be requested to arrange special post-graduate courses for the training of medical women in the modern

methods of treatment; a strong appeal is made to medical women to specialise in this subject.

3. That some means should be devised whereby medical practitioners are encouraged to diagnose venereal disease in patients and also to give early preventive treatment. In the meantime the Local Government Board could secure the services from the Military Medical Department of three or four of the recognised authorities on venereal disease, and arrange for them to hold conferences with the local medical men in various parts of the country, with a view to devising the best means of securing efficiency and continuity of treatment.

4. That the King's Regulations and the Army Act should be so amended as to enable men in an infective condition to be retained in the Navy and Army pending the completion of treatment, in order that they may return to civil life in sound health. It is understood that the Army Act must, in any case, be amended to meet various needs for the retention of part of the forces on demobilisation, and this could form an appropriate category among others.

5. That it should be made a statutory obligation for every individual suffering from venereal disease to obtain and to continue treatment until cured.

6. That the Local Government Board should be asked to consider immediately whether some modified form of confidential notification of infective cases could be adopted under existing powers, and whether at a later date fresh powers could be obtained from Parliament.

7. That the Minister of Munitions should give definite instructions that all men and women working in the national and controlled firms would receive adequate instruction from responsible trained men and women.

8. That Clause 5 of the Criminal Law Amendment Bill, as amended by the National Council, should be passed as a short Act as early as possible next session. To make it effective an additional clause is necessary making it a statutory obligation on medical practitioners to warn their patients and to give evidence if required in a court of law under the Act (as is done in Queensland, Victoria, and Western Australia).

9. That the Joint Committee of both Houses should be reappointed directly the new Parliament assembles.

10. That an amended form of Clause 3 of the Criminal Law Amendment Bill should be passed next session.

11. That an organisation is needed which could train large numbers of girls in skilled employment, under discipline, returning them as well as supporting members of the community as soon as possible, with no permanent slur on their character; such an organisation to be eligible for recognition by the Home Office under Clause 3.

12. That the Mental Deficiency Act should be amended to enable the protection of the community to be extended to the mentally defective individual suffering from venereal disease and the morally defective person.

13. That the Home Office be asked to encourage each town and county to appoint an adequate number of women police without delay.

The final resolution called on social organisations to develop the service of voluntary women patrols.

The Anti-venereal Campaign in the United States.

The Public Health Service of the United States is taking active steps to prevent the spread of venereal diseases in the country during demobilisation. The Chamberlain-Kahn Act, framed with a view of providing Federal aid for State anti-venereal work, has set up a Venereal Disease Division in the U.S. Public Health Service, and this division, acting in conjunction with the State Boards of Health, is now conducting about 125 venereal clinics. The attendance at these clinics is such that additional clinics are already needed. The division is also co-operating with the Red Cross in the conduct of 25 clinics in extra-cantonment zones, and arrangements have been made to initiate clinics in 102 cities under the joint auspices of the Public Health Service and the Red Cross. The work in general will embrace the following four principal features:—1. Educational: to acquaint the public with the nature of the diseases and the objectives to be accomplished. 2. Law enforcement: to secure co-operation of the physicians in reporting cases, and of the police in apprehending prostitutes, vagrants, and such other persons as can be reasonably suspected of having venereal disease in the communicable stage. 3. Propaganda: to secure local funds for providing detention homes and hospital facilities for isolation and treatment of venereal disease carriers who, by their habits, are a menace to the public health. 4. The establishment of increased facilities for early diagnosis and treatment.

Surgeon-General Blue recently asked ministers of religion to set apart a "Public Health Sunday" and to arrange for addresses on the nation's responsibility of protecting the health of its returning sailors and soldiers, as well as of the people generally. In his circular General Blue urges the necessity for enforcing, during the period of demobilisation, drastic measures to prevent a recurrence of the pre-war conditions in civil life which rendered venereal diseases the most fruitful cause of military disability. The safety of the soldiers during demobilisation is demanded "in order that the world may be made not only safe for democracy, but safe for posterity."

Thirty-nine States have adopted laws based wholly or in part upon the regulations drawn up by the Division

of Venereal Diseases, under which distribution of the respective allotments of the million dollars to be expended this year will be made to the States. The health authorities of these States have recognised venereal diseases as communicable and dangerous to the public health and have made them legally notifiable. It is anticipated that the remaining States, with possibly one or two exceptions, will do so in the near future. Thirty-two States have passed laws rendering it illegal for druggists to dispense nostrums and remedies for the treatment of venereal diseases.

The protection of the men in the military training camps seems to have been adequately and effectively supervised by the Army medical authorities, and the same may be said with regard to the personnel of the Navy. It is, however, obvious that the main source of infection and spread is the civilian population. The demobilisation of the soldiers will greatly complicate the situation, for not only has there been a decided increase of infection among the civilian population during the time the United States was at war, but the demobilised men will be likely easily to lay themselves open to the risks of infection. They are all young or in the early prime of lusty manhood; after the hard and dangerous life they have been leading, coupled with the fact that they are returning home safe and sound after a long absence, they are likely to be in that state of mind when caution is thrown to the winds, and this feeling will be intensified by freedom from discipline and all that it entails. In the Army they were protected as far as possible from the risk of infection, and, when infected, were treated promptly and efficiently. "In this country," writes one of our American correspondents, "the most rigid precautions were taken to prevent them contracting venereal disease. The obligation to protect the health of the military forces in civilian territory was placed upon the Public Health Service by Executive order and Act of Congress, and this duty has been performed excellently. The campaign inaugurated and being carried on under the auspices of the Public Health Service and the American Red Cross will undoubtedly have a good effect in protecting the demobilised men and preventing the spread of venereal diseases far and wide, but will hardly be successful in eliminating the menace. Many medical men here, as in Great Britain, are in favour of prophylactic measures similar to those enforced in the United States Army in 1912 and to those used among the Australian forces being employed in civil life, provided that it is possible. The seriousness of the problem is fully realised by both the public and the medical profession, and this realisation alone is to a great extent an augury of the success of the vigorous campaign that is being waged by the Government of this country for the protection of the demobilised soldiers and civilian population against venereal disease."

UNIVERSITY OF BRUSSELS: RESUMPTION OF MEDICAL COURSES.

THE Free University of Brussels on Jan. 22nd resumed its former courses in the Faculty of Medicine for its own students, while at the same time the M.D. degree has again been thrown open after examination to registered medical practitioners of other countries.

The Domestic Medical Curriculum.

The curriculum of study for Belgian students includes a course of human anatomy and embryology, conducted by M. Brachet and M. A. Lameere; physiology and histology is taken by M. Dustin and M. J. Demoor; chemical biology and physiology by M. Slosser; surgical pathology by M. Depage, who also conducts the surgical clinic at St. Pierre; general pathology by M. Spehl; midwifery, including the obstetric clinic at the Maternité, by M. Cocq; pharmacology and therapeutics by M. Jacques; bacteriology, parasitology, and epidemiology by M. Bordet; special pathology and therapeutics of internal diseases, and the medical clinic at St. Jean, by M. René Verhoogen; morbid anatomy, by M. Sténon; medical clinic at St. Pierre, M. Vandervelde; surgical clinic at St. Jean, M. J. Verhoogen; psychiatry, M. Ley; ophthalmology and clinical ophthalmology at St. Jean, M. Gallemearts; theory and practice of operative surgery, M. Laurent; medical

jurisprudence, M. Heger-Gilbert; hygiene, M. Gengou. Complementary clinical courses are also arranged for students and doctors of medicine who have registered with the secretary of the university, and include courses at St. Jean and St. Pierre on children's diseases, mental affections, skin diseases, syphilis, gynaecology, and diseases of the ear, nose, and throat. Courses of instruction for the diploma of public health have been arranged, as well as free courses in (among other subjects) anthropology (M. Houzé), practical urology (M. le Clerc-Dandoy), diseases of children (M. Péchère), gynaecology (M. Rouffart), practical radiology (M. Hauchamps).

The M. D. Brussels for Strangers.

The examination for the M. D. degree is arranged in three parts. No conditions of residence are needed; the time required for the three examinations seldom exceeds 10 or 12 days, and candidates who are unable to be so long away from home may take each part separately. The examinations are conducted in English through the medium of an interpreter (without additional charge). They take place on the first Tuesday in November, December, March, and May, and the second Tuesday in June. They are *viva voce*, but candidates may have a written examination by paying an additional fee of £1 for each test. This does not exempt them from the *viva voce* examination. Part I. includes general medicine; materia medica and pharmacology; general surgery; and the theory of midwifery. Part II. includes general therapeutics; pathology and morbid anatomy, and the use of the microscope; special therapeutics and medicine of internal diseases; special surgery; and mental diseases. Part III. includes public and private hygiene; medical jurisprudence; clinical medicine; clinical surgery; examination in operative surgery, consisting of some of the usual operations on the dead subject—viz., amputation, ligature of artery, &c.; ophthalmology; examination in midwifery, consisting of obstetrical operation on the mannequin (model of pelvis), examination in regional anatomy with dissection; and bacteriology.

Further information may be obtained from the secretary of the University, rue des Sols, 14, Brussels.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Recrudescence of Influenza.

THERE has been an unpleasant, almost menacing, recurrence of influenza in New York City, and the contagion appears to be again spreading. As in the recent outbreak, the disease is accompanied, or rather complicated, by pneumonia, to which most of the mortality is due. Medical men here, as elsewhere, are not agreed as to the most effective means of treating influenza. Many of the practitioners here, perhaps the majority, employ one or other of the coal-tar products for the purpose of lowering the temperature. Some, however, hold that such treatment is frequently harmful owing to the depressant action of these drugs, which may in the long run do more harm than good. The administration of Warburg's tincture has been advocated by some. The use of vaccines has been followed with little or no success. The suppression of influenza undoubtedly depends on rational preventive methods rigidly enforced, although it is plain that their enforcement is attended with numerous difficulties.

A New Narcotic Drug Law for New York State.

A new narcotic drug law has been created recently in New York State which supersedes the existing law, and came into force on Feb. 1st. According to the enactments of the new law every physician, druggist, dentist, veterinarian, hospital, sanatorium, or other institution, manufacturer, or wholesale distributor, prescribing, administering, dispensing, selling, or manufacturing cocaine, opium or its derivatives, had, during the month of January, to file an application and receive from the department a certificate of authority to deal in habit-forming drugs. No fee is required, and the registration will stand for the remainder of the State fiscal year; after that time, during the month of June in each year, those coming under the above designation shall in like manner register with the New York State Department of Narcotic Drug Control, and for this and each

subsequent registration a fee of \$1.00 shall be paid to the Department.

Prohibition in the United States.

There is much strong feeling with regard to the question of the prohibition law which will come into effect in all States of the Union in January, 1920. On the one hand, it is thought that the present time, when labour unrest is rampant throughout the country, is peculiarly ill-fitted for the passing of such a drastic law; on the other hand, it is recognised, both by the public and by the medical profession, that the abuse of strong drink has been the cause of much disease and an unspeakable amount of suffering and misery. At the same time, it is considered by many that it would have been wiser to proceed more slowly, to restrict the facilities for procuring alcohol, to lessen the number of public-houses in the large cities, and improve the quality of the diminished number. Some of them have been important factors in corrupt municipal politics and have been centres of vice. An improvement in the housing conditions would, in the opinion of many, proportionately raise the standard of the public house. Among the various evils which (it is prophesied) prohibition will bring in its train is an increase of the drug habit. In *American Medicine*, January, 1919, it is pointed out that the sale of drugs increases *pari passu* with the decrease in the sale of alcoholic stimulants. Moreover, liquor will be procured secretly, and there will be a considerable amount of illicit manufacture of alcohol. It remains to be seen whether in America, young and impatient of delay, it is possible to make a nation sober by Act of Parliament.

Prohibition Regulations for New York.

A Bill to enforce prohibition in New York State has been drafted, in ratification of the Federal Amendment, for introduction to the New York State Legislature. The Bill contains very drastic provisions relating to the sale of alcohol by medical men and druggists. The law enacts that druggists may not sell alcohol except upon a physician's prescription, and an affidavit is required of all persons desiring to buy alcohol for mechanical, chemical, or sacramental purposes. A pharmacist's licence to sell alcohol may not be issued in any form except to druggists who have never been convicted of an illegal sale of liquor, and whose stock of alcohol in hand does not represent more than 1 per cent. of the value of all goods in his place of business. Such druggists must be of temperate habits and may not sell to any person known to be accustomed to take alcoholic beverages. Moreover, the sale of toilet, culinary, antiseptic, and flavouring extracts and patent medicines, the manufacture of which involves the payment of a United States liquor dealer's tax, is prohibited. No one but a druggist licensed to sell alcohol is permitted to sell proprietary preparations or patent medicines except on the prescription of a licensed medical man. Medical men are required to keep a record of all prescriptions issued by them for alcoholic compounds, and those allowed to issue such prescriptions must first give a bond of \$2000 (£400) that they will observe the provisions of the law and are licensed by the Prohibition Commissioner.

Feb. 15th.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Surgeon Capt. W. G. Axford has been placed on the Retired List, with the rank of Surgeon Rear-Admiral, in recognition of services rendered during the war.

Surgeon Commander to be Surgeon Captain: C. M. Beadnell.
Surgeon Lieut. Cdr. (Emerg.) G. H. S. Miller, R.N., granted rank of Surgeon Commander (Emergency) for services rendered during the war.

Temp. Surg. Lieut. G. W. Pool, who has been invalided on account of ill-health contracted in the Service, to retain his rank.

ROYAL ARMY MEDICAL CORPS.

Temp. and acting Major G. Taylor relinquishes his acting rank on re-posting.

Capt. W. H. S. Burney to be acting Major.
Temp. Col. S. M. Smith (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

Late temporary Captain granted the rank of Captain: J. S. S. Steele Perkins, J. C. King.

Temporary Lieutenants to be temporary Captains: B. Blacklock, C. B. G. G. Stwyck, H. F. Hutchinson.

C. H. Lloyd to be temporary Captain.

Temp. Hon. Lieut. L. M. Earle to be temporary Honorary Captain whilst serving with the British Red Cross Hospital, Netley.

Temp. Col. W. Thorburn, A.M.S. (Lieut. Col., R.A.M.C., T.F.) relinquishes his temporary commission on re-posting; Capt. St. J. Buxton relinquishes the acting rank of Major.

Temp. Capt. (acting Major) T. D. H. Holmes relinquishes his commission and retains the rank of Major.

Temporary Captains granted the rank of Major: E. L. M. Hackett, J. L. Gordon, B. H. Barton, S. J. Rowntree, C. A. H. Gee, R. S. Frew, H. B. Atlee, J. R. Craig.

Temporary Captains retaining the rank of Captain: W. Anderson, C. M. G. Elliott, R. M. Walker, B. W. Mosher, N. M. Keith, J. A. Mateon, B. F. Bailey, J. A. Jones, W. A. L. Marriott, E. C. Gimson, C. E. Droop, R. L. Blenkhorn, A. G. Brand.

The undermentioned on ceasing to be employed with the St. John Ambulance Brigade Hospital, and retain their honorary rank:—Temp. Hon. Majors C. W. M. Hope, T. Houston; Temp. Hon. Capt. F. Coates, W. F. Matthews, F. Hall, C. E. Butterworth, J. M. McCloy; Temp. Hon. Capt. S. E. T. Shann, on ceasing to be employed with No. 5 British Red Cross Hospital, and retains the honorary rank of Captain; Temp. Hon. Capt. A. C. Inman, and retains the honorary rank of Captain; Temp. Lieut. H. Cansfield, and retains the rank of Lieutenant.

Canadian Army Medical Corps.

Temp. Major F. B. Carron to be temporary Lieutenant-Colonel.

Temp. Major W. H. Merritt to be acting Lieutenant-Colonel while employed at a Canadian Special Hospital.

Temporary Captains to be acting Majors while employed at Canadian Stationary Hospitals: V. N. Mackay, J. S. Hudson, H. C. Davis, M.C., while employed with Canadian Field Ambulance.

SPECIAL RESERVE OF OFFICERS.

Capt. (acting Major) T. Y. Barkley to be acting Lieutenant-Colonel whilst in command of a Medical Unit.

Captains relinquishing the acting rank of Major on re-posting: W. G. B. Meyer, A. A. Smalley.

Captains to be acting Majors: W. Dunlop, G. G. Jack, D. M. Lyon. Lieutenants to be Captains: G. F. J. Carruthers, J. W. O. Fairweather, H. Roger, A. Bullied, C. P. Ratner, A. Blackstock, L. C. Goumont, W. E. Le G. Clark, A. W. Wells, T. Davies, E. B. Ash, G. W. Coombes, D. V. Halstead, J. R. Cox, M. W. Giffen.

A. St. G. J. McU. Huggett, R. Gainsborough, W. H. Palmer, from University of London Contingent, O.T.C., to be Lieutenants.

TERRITORIAL FORCE.

Major G. A. Troup to be Lieutenant-Colonel.

Major (acting Lieut.-Col.) W. D. Watson relinquishes his acting rank on ceasing to be specially employed.

Capt. J. Angus relinquishes his commission on account of ill-health contracted on active service and retains the rank of Captain.

Capt. M. B. H. Stratford relinquishes his commission on account of ill-health contracted on active service and retains the rank of Captain.

Capt. J. F. W. Wyer relinquishes his commission on account of ill-health and retains the rank of Captain.

Capt. (acting Lieut.-Col.) A. C. H. McCullagh relinquishes his acting rank on ceasing to be specially employed.

Capt. T. G. Buchanan to be acting Major whilst specially employed.

Capt. (acting Major) J. W. Cairns relinquishes his commission on account of ill-health contracted on active service and retains the rank of Major.

2nd Eastern General Hospital: Capt. H. N. Fletcher is restored to the establishment.

1st Western General Hospital: Capt. (acting Lieut.-Col.) J. M. Hunt relinquishes his acting rank on ceasing to be specially employed.

ROYAL AIR FORCE.

Lieut.-Col. T. D. C. Barry is granted the acting rank of Colonel.

Majors granted the acting rank of Lieutenant-Colonel: E. H. McGiffin, G. D. Bateman, B. E. Bickford.

Captains granted the acting rank of Major: W. Darling, J. M. Kirkness, T. S. Ripp n, B. A. Payne, P. H. Hadfield, R. H. Knowles, P. L. Moore, A. A. Atkinson, J. J. C. Hamilton, F. C. Jobson, M. E. Dobson, J. MacGregor, F. N. B. Smartt, A. A. Bisset, H. Stedman, L. C. M. Wedderburn, H. M. S. Turner, H. E. Whittingham, A. Scott-Turner, C. J. G. Taylor, O. H. Gotes, H. G. Anderson, H. A. Hewat, W. Enraght, D. Ranken.

Capt. (acting Major) C. E. Thwaites retains the acting rank of Major whilst employed as Major, from (S.O.)

P. O. Moffat (temp. Capt., R.A.M.C.) is granted a temporary commission as Captain.

Lieutenants granted the acting rank of Captain: C. H. Vernon, G. W. Harbottle, L. C. Broughton-Head.

E. H. Turner is granted a temporary commission as Lieutenant.

Capt. D. Ross is transferred to unemployed list.

URBAN VITAL STATISTICS.

(Week ended Feb. 22nd, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 15.0 to 27.8 in the four preceding weeks, further rose to 35.7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 34.2, or 7.0 per 1000 above that recorded in the previous week; among the remaining towns the rates ranged from 11.8 in Coventry, 16.6 in Walthamstow, and 19.1 in Enfield, to 58.9 in Blackburn, 69.5 in Bradford, 60.9 in Southport, 64.3 in Wakefield, 66.1 in Newcastle-on-Tyne, and 81.5 in West Hartlepool. The principal epidemic diseases caused 196 deaths, which corresponded to an annual rate of 0.6 per 1000, and included 46 from diphtheria, 43 from measles, 42 from infantile diarrhoea, 38 from whooping-cough, 21 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 2.3 in Warrington and 4.4 in Middlesbrough, and whooping-cough of 1.2 in Bristol. The deaths attributed to influenza, which had increased from 222 to 1363 in the four preceding weeks, further rose to 304, and included 653 in London, 188 in Liverpool, 163 in Newcastle-on-Tyne, 142 in Bradford, 130 in Manchester, 84 in Birmingham, and 82 in Leeds.

There were 1088 cases of scarlet fever and 1185 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1094 and 1173 respectively at the end of the previous week. The causes of 89 deaths in the 96 towns were uncertified, of which 17 were registered in Birmingham, 16 in Liverpool, and 5 each in London, Manchester, and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17.0 to 32.0 in the five preceding weeks, further rose to 38.4 per 1000. The deaths from influenza numbered 75, while in 503 deaths classified as due to other conditions influenza was a contributory cause; in the previous weeks these numbers were 76 and 298 respectively. The 906 deaths in Glasgow corresponded to an annual rate of 42.2 per 1000, and included 52 from whooping-cough, 6 from diphtheria, 4 from infantile diarrhoea, and 2 each from measles and scarlet fever. The 336 deaths in Edinburgh were equal to a rate of 52.1 per 1000, and included 6 from whooping-cough, 3 each from diphtheria and infantile diarrhoea, and 1 from scarlet fever.

Irish Towns.—The 351 deaths in Dublin corresponded to an annual rate of 45.2, or 11.9 per 1000 above that recorded in the previous week, and included 88 from influenza, and 5 from infantile diarrhoea. The 218 deaths in Belfast were equal to a rate of 28.3 per 1000, and included a fatal case of infantile diarrhoea.

VITAL STATISTICS OF LONDON DURING JANUARY, 1919.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4.5 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 5.9, 4.0, and 4.2 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Chelsea, the City of Westminster, Hampstead, Holborn, Finsbury, and the City of London; and the highest in Stoke Newington, Bethnal Green, Stepney, Southwark, Bermondsey, and Deptford. Seven cases of small-pox were notified during the month; of these 4 belonged to St. Pancras and 3 to Battersea. The prevalence of scarlet fever was slightly less than that in the preceding month; this disease was proportionally most prevalent in Fulham, Bethnal Green, Stepney, Southwark, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1043 scarlet fever patients at the end of the month, against 1184, 1107, and 1087 at the end of the three preceding months; the weekly admissions averaged 128, against 178, 146, and 136 in the three preceding months. The prevalence of diphtheria was about 15 per cent. higher than in December; the greatest prevalence of this disease was recorded in St. Marylebone, St. Pancras, Stoke Newington, Hackney, Bethnal Green, Stepney, and Bermondsey. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1155, 1000, and 1089 at the end of the three preceding months, numbered 1170 at the end of

January; the weekly admissions averaged 164, against 169, 129, and 146 in the three preceding months. Enteric fever was slightly more prevalent than in the preceding month; of the 25 cases notified in January, 6 belonged to Stepney, 4 to Battersea, 2 to the City of Westminster, 2 to Islington, and 2 to Bethnal Green. There were 23 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 56, 33, and 23 at the end of the three preceding months; the weekly admissions averaged 3, against 9, 3, and 1 in the three preceding months. Erysipelas was proportionally most prevalent in Stoke Newington, Shoreditch, Bethnal Green, Poplar, Southwark, and Camberwell. Sixteen cases of puerperal fever were notified during the month; of these 4 belonged to Fulham and 2 to Southwark. Of the 19 cases of cerebro-spinal meningitis 3 belonged to Stepney, 2 to Fulham, 2 to Islington, 2 to Bermondsey, and 2 to Battersea; while the 3 cases of poliomyelitis belonged respectively to the City of Westminster, Poplar, and Lambeth.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the five weeks ended Feb. 1st the deaths of 6036 London residents were registered, equal to an annual rate of 15.6 per 1000; in the three preceding months the rates had been 27.3, 42.3, and 18.5 per 1000. The death-rates ranged from 12.6 in Wandsworth, 12.9 in Fulham, 13.2 in Stoke Newington, 13.5 in Deptford, 13.9 in Battersea and 14.0 in Lewisham, to 17.2 in Paddington, 17.3 in Chelsea, 17.3 in Finsbury, 17.6 in Shoreditch, 18.5 in St. Marylebone, and 20.7 in Southwark. The 6036 deaths from all causes included 217 which were referred to the principal infectious diseases; of these, 14 resulted from measles, 10 from scarlet fever, 82 from diphtheria, 11 from whooping-cough, 8 from enteric fever, and 92 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in the City of London and in Greenwich. Among the metropolitan boroughs the lowest death-rates from these diseases were recorded in Hammersmith, the City of Westminster, Holborn, Battersea, Wandsworth, and Lewisham; and the highest death-rates in Fulham, Chelsea, St. Marylebone, Stoke Newington, Hackney, Shoreditch, and Bethnal Green. The 14 deaths from measles were 126 below the average number in the corresponding period of the five preceding years, and included 4 in Chelsea, 3 in Camberwell, and 2 in Kensington. The 10 fatal cases of scarlet fever were half the average number; of these, 3 belonged to Lambeth and 3 to Deptford. The 82 deaths from diphtheria were 7 above the average; this disease was proportionally most fatal in Paddington, St. Marylebone, Stoke Newington, Hackney, and Bermondsey. The deaths from whooping-cough numbered 11, and were 93 below the average; of these, 3 belonged to Woolwich and 2 to Islington. The 8 fatal cases of enteric fever were 3 below the average number. The 92 deaths from diarrhoea and enteritis among children under 2 years of age agreed with the average; the greatest proportional fatality from this disease occurred in Kensington, Fulham, St. Marylebone, Shoreditch, Bethnal Green, and Southwark. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during January was 51 per cent. below the average.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JANUARY, 1919.

(Specially compiled for THE LANCET.)

| CITIES AND BOROUGH. | Estimated civil population, 1917. | Notified Cases of Infectious Disease. | | | | | | | | | | | Deaths from Principal Infectious Diseases. | | | | | | | | | | | |
|------------------------|--------------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|------------------------------|---------------------|-------------|-------------------------------|----------------|--------|--|------------|----------|----------------|--------------|---------------------|----------------|---|--------|--|----------------------------|--------------------------------|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other con- tinued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping- cough. | Enteric fever. | Diarrhoea and enteritis (under 2 years) | Total. | Annual rate per 1000 persons living. | Deaths from all causes. | Death-rate per 1000 living. |
| LONDON... .. | 4,026,901 | 7 | 683 | 817 | — | 25 | 1 | 16 | 184 | 19 | 3 | 1755 | 4.5 | — | 14 | 10 | 82 | 11 | 8 | 92 | 217 | 0.6 | 6036 | 15.6 |
| West Districts : | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 122,507 | — | 14 | 23 | — | 1 | — | — | 2 | — | — | 40 | 3.4 | — | — | — | 4 | 1 | — | 3 | 8 | 0.7 | 202 | 17.2 |
| Kensington | 151,535 | — | 24 | 25 | — | — | — | — | 4 | 1 | — | 54 | 3.7 | — | 2 | — | — | — | — | 7 | 9 | 0.6 | 239 | 16.4 |
| Hammersmith | 114,952 | — | 17 | 22 | — | — | — | — | 6 | 1 | — | 46 | 4.2 | — | — | — | 3 | — | — | — | 3 | 0.3 | 163 | 14.8 |
| Fulham | 145,136 | — | 42 | 20 | — | 1 | — | — | 4 | 4 | — | 73 | 5.2 | — | 1 | — | — | — | 1 | 10 | 14 | 1.4 | 180 | 12.9 |
| Chelsea | 57,368 | — | 5 | 3 | — | — | — | — | 1 | — | — | 9 | 1.6 | — | 4 | — | — | 1 | — | — | 5 | 0.9 | 96 | 17.3 |
| City of Westminster | 122,046 | — | 7 | 12 | — | 2 | — | — | 1 | 3 | — | 27 | 2.3 | — | — | — | 2 | — | — | 1 | 3 | 0.3 | 168 | 14.3 |
| North Districts : | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 92,796 | — | 9 | 29 | — | — | — | 1 | 3 | 1 | — | 43 | 4.8 | — | 1 | — | 4 | — | — | 4 | 9 | 1.0 | 165 | 18.5 |
| Hampstead | 75,649 | — | 9 | 12 | — | 1 | — | — | 1 | — | — | 23 | 3.2 | — | — | — | — | — | — | 3 | 3 | 0.4 | 113 | 15.6 |
| St. Pancras | 136,600 | 4 | 21 | 57 | — | 1 | — | — | 1 | 12 | 1 | 97 | 5.4 | — | — | — | 4 | — | — | 7 | 11 | 0.6 | 285 | 15.9 |
| Islington | 297,102 | — | 43 | 49 | — | 2 | — | — | — | 14 | 2 | 110 | 3.9 | — | — | — | 7 | 2 | — | 4 | 13 | 0.5 | 461 | 16.2 |
| Stoke Newington... | 47,426 | — | 6 | 17 | — | — | — | — | — | 4 | — | 27 | 5.9 | — | — | — | — | — | — | 4 | 4 | 0.9 | 60 | 13.2 |
| Hackney | 196,598 | — | 31 | 63 | — | 1 | — | — | 1 | 8 | — | 104 | 5.5 | — | — | 1 | 14 | — | — | 3 | 18 | 1.0 | 323 | 17.1 |
| Central Districts : | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 35,303 | — | — | 10 | — | — | 1 | — | — | — | — | 11 | 3.2 | — | — | — | 1 | — | — | — | 1 | 0.3 | 52 | 15.4 |
| Finsbury | 68,011 | — | 7 | 10 | — | — | — | — | — | 4 | — | 21 | 3.2 | — | — | — | — | — | — | 2 | 3 | 0.5 | 113 | 17.3 |
| City of London | 16,138 | — | — | 2 | — | — | — | — | — | — | — | 2 | 1.3 | — | — | — | — | — | — | — | — | — | 22 | 14.2 |
| East Districts : | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 89,675 | — | 11 | 17 | — | — | — | — | 8 | — | — | 36 | 4.2 | — | 1 | — | 2 | — | 1 | 4 | 8 | 0.9 | 151 | 17.6 |
| Bethnal Green | 107,362 | — | 33 | 38 | — | 2 | — | — | 1 | 10 | — | 84 | 8.2 | — | — | 1 | — | — | 1 | 6 | 9 | 0.9 | 156 | 15.9 |
| Stepney | 232,010 | — | 59 | 73 | — | 6 | — | — | 1 | 13 | 3 | 155 | 7.0 | — | — | — | 5 | 1 | — | 7 | 13 | 0.6 | 347 | 15.6 |
| Poplar | 143,443 | — | 20 | 23 | — | 1 | — | — | — | 11 | 1 | 57 | 4.1 | — | — | — | 3 | — | 1 | 4 | 8 | 0.6 | 219 | 15.9 |
| South Districts : | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 167,936 | — | 46 | 34 | — | — | — | 2 | 12 | — | — | 94 | 5.8 | — | — | — | 4 | — | — | 8 | 12 | 0.7 | 334 | 20.7 |
| Bermondsey | 107,635 | — | 21 | 40 | — | 1 | — | — | 1 | — | — | 65 | 6.3 | — | — | — | — | — | — | 7 | 7 | 0.7 | 153 | 14.4 |
| Lambeth | 272,038 | — | 46 | 37 | — | — | — | — | 10 | 1 | — | 96 | 3.7 | — | — | 3 | 2 | — | 1 | 7 | 13 | 0.5 | 419 | 16.1 |
| Battersea | 150,023 | 3 | 23 | 18 | — | 4 | — | — | 5 | 2 | — | 55 | 3.8 | — | 1 | — | 1 | — | 1 | 1 | 4 | 0.3 | 200 | 13.9 |
| Wandsworth | 300,787 | — | 43 | 43 | — | — | — | — | 1 | 11 | — | 98 | 3.4 | — | — | — | 7 | — | — | 3 | 10 | 0.3 | 363 | 12.6 |
| Camberwell | 239,461 | — | 32 | 50 | — | — | — | — | 17 | 1 | — | 100 | 4.4 | — | 3 | 1 | 4 | 1 | — | 3 | 12 | 0.5 | 362 | 15.8 |
| Deptford | 103,527 | — | 54 | 22 | — | — | — | — | 5 | — | — | 87 | 8.8 | — | — | 3 | 1 | — | 1 | — | 5 | 0.5 | 134 | 13.5 |
| Greenwich | 90,440 | — | 23 | 13 | — | 1 | — | — | 1 | 4 | — | 42 | 4.8 | — | — | — | — | — | — | — | — | — | 148 | 17.1 |
| Lewisham | 161,406 | — | 18 | 24 | — | — | — | — | 9 | — | — | 51 | 3.3 | — | 1 | — | 1 | — | — | 1 | 4 | 0.3 | 216 | 14.0 |
| Woolwich | 131,942 | — | 19 | 25 | — | — | — | — | 1 | 3 | — | 48 | 3.8 | — | — | 1 | 2 | 3 | 1 | 1 | 8 | 0.6 | 193 | 15.3 |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup.

Correspondence.

"Audi alteram partem."

THE ESSENTIAL PRINCIPLES OF SUCCESSFUL MEDICAL ADMINISTRATION.

To the Editor of THE LANCET.

SIR,—Carlyle has said that the most important fact about a man is his religion. We may safely broaden this statement by saying that the most important facts about any human policy are the principles which underlie it. In the present crisis of the fortunes of medicine it will be calamitous if we fail to realise this paramount importance of principles.

The essential principles of successful medical administration may be thus enunciated:—

1. The utmost possible *freedom* must be assured to the practice of medicine in all its departments.

2. Adequate standards both of general *education* and professional knowledge must be required on entry to the profession.

3. The *control* of medicine must be by adequately educated minds; medicine must have a sufficient voice in its own control, together with sufficient authority in all matters entrusted to it; and disciplinary powers over professional practice must be primarily in medical hands.

4. Reasonable *remuneration, holiday, and leisure* must be assured to all members of the profession.

Let me deal with these briefly. There is nothing new about any of them. All have been before the profession for years. THE LANCET has, at one time or another, voiced them all.

1. *Freedom.*

To insist upon the value of freedom, when so lately millions have laid down their lives for it, might seem unnecessary were it not that intelligent persons are advocating a wholesale surrender of the independence of the entire British medical profession. For that is just what the acceptance of universal whole-time medical State service would mean. No art or science has long flourished after it has been deprived of freedom, and Buckle has well put the reason for this: "It is certain that men who begin by losing their independence will end by losing their energy." The whole history of medicine illustrates this truth. Illustrations of it are even now under our eyes. There will be no excuse of want of warning if, from defect of manhood or neglect of national duty, we allow our liberty to be taken from us. How then, in a great scheme of medical administration, is this essential freedom to be preserved? There are certain sections of medical work which cannot be carried out otherwise than as whole-time State service, and the question naturally arises: "Will not that be injurious?" The answer is: "No, so long as the mass of medicine is free to create the atmosphere of medical liberty." It is whole-time State service of the mass which would be so pernicious in its effects. In the existing whole-time appointments of the Public Health Service we have had an illustration of the protecting influence of a free mass of medicine. But such sections will need safeguards.

The first of such services is the Public Health Service. None can deny that the work of this Service has already been admirable. But few will dissent when it is asserted that its medical officers should be made independent of interested local influences. Its reorganisation as a whole-time State service under a Minister of Health will be in reality a liberation from undesirable control. Its removal from a subordinate position in an alien Ministry, such as the Local Government Board, will be a further liberation. The administrative officers of the military services must also form whole-time services. But the experience of the war will leave few in doubt of the necessity of liberating the Army Medical Service from excessive military control and of bringing it more fully into touch with the civil profession by making it medically responsible to a civil Ministry of Health. Only thus can the profession guard against the repetition of misfortunes which have flowed from two causes (the traditions of an alien control), viz., attention to "forms" rather than to patients and to "seniority" rather than to science.

For adequate freedom of the mass of medicine the other three principles just enumerated are clearly essential, and the following would seem to be necessary conditions:

1. Free choice of doctor by patient and patient by doctor as the best means of maintaining the very peculiarly human relationship of doctor and patient so vitally essential to getting the best out of clinical work. 2. The existence of a considerable proportion of medical men, as now, in "private practice," outside the State services. 3. Wherever State service is needed, and the choice is possible, the adoption of part-time service instead of whole-time service. 4. Probably payment by piece-work or per patient in State clinical work rather than any more inclusive system of State contract.

Whether or not institutions now admittedly working well outside State service, like our voluntary hospitals, should be touched by the State is a question needing the most serious thought, but if their medical officers should come to be paid by the State it would seem essential that their service should be only part-time. Part-time State service would also meet the case of the clinical teachers of medicine. Directed by a Ministry of Health, part-time State service seems the only practicable plan for the much-needed reform of the present panel system. Part-time State service under a Health Ministry, in fact, for the bulk of such departments of medicine as come under the State, is probably the best solution of the problem of State control.

2. *Education.*

The standard of preliminary general education required of the doctor has now for some years been practically the same as that for the veterinary surgeon or for the pharmaceutical chemist; and the public, which has a nice discrimination in matters of education, has rated us up, all three, as being on practically the same level of culture. The technical education at the same time has grown so cumbersome as to seriously need revision. This revision, both of technical and general standards, together with the establishment of their uniformity throughout the United Kingdom, must be dealt with by a State Medical Committee predominantly representing the nation and the profession at large, and including not merely medical men, but representatives of the chief general educational authorities in the country. The faults of the General Medical Council, however, it should be noted, reside, not in the able and honourable men who compose it, but in its peculiarly limited powers.

3. *Educated Control.*

Every department of State, be it Naval, Military, or Medical, must be under the control of the community; therefore the control of medicine must be as much in lay hands as the control of the Navy or Army. But no more than the control of the Navy or Army must the control of medicine be in imperfectly educated hands. I yield to no one in my admiration and regard for the average British fighting man, whose superb qualities, alike in defeat and victory, this war has once more illustrated. But it is neither for his good, nor for the good of the nation, that, without special education, he should be charged with the control of so complex and vital a national organ as medicine. Outside Russia one does not convene committees of able-seamen or private soldiers to give directions to admirals and generals. His unflinching fellows, who displayed at home such senseless selfishness at critical periods of the war, gravely imperilling the victory of the Allies, are manifestly unfit for such responsibility. The administration of medicine, then, must be in the hands of well-educated men, and, amongst these men, capable and trustworthy representatives of the profession must form a sufficient minority. The Minister himself should be a medical man, because no other can properly voice to the Cabinet, Parliament, and the public the medical requirements of the country.

4. *Reasonable Remuneration, Holiday, and Leisure.*

However self-sacrificing an industry may be (and none has been more self-sacrificing than ours), a limit exists below which inadequate remuneration must spell a decline in efficiency. That limit has been long passed for medicine. What a man may reasonably claim as his minimum payment for public service is a sufficiency to maintain himself and his family in health and vigour (needing reasonable holiday and leisure), to educate his children for work as responsible as his own, to make provision for his old age, and to provide an insurance for his dependents against his death or disablement. How many doctors get this? Yet they are all entitled to it and, if they could only cultivate enough mutual loyalty, they could obtain it.

I am, Sir, yours faithfully,

Exeter, Feb. 17th, 1919.

WILLIAM GORDON.

PREVENTIVE INOCULATION AGAINST INFLUENZA.

To the Editor of THE LANCET.

SIR,—I think that the official Memorandum on Prevention of Influenza just issued by the Medical Department of the Local Government Board casts an unmerited slur on the value of protective inoculation. I have had the opportunity of carrying out inoculation on a large scale and the results have been most satisfactory. Out of 1100 subjects about 800 were inoculated in November and December, and the figures at the end of January were as follows:—

| | |
|------------------------------------|----------------|
| Incidence among inoculated ... | 0.5 per cent. |
| non-inoculated ... | 10.0 per cent. |
| Death-rate of inoculated cases ... | Nil. |
| non-inoculated ... | 19 per cent. |

Since the above date I have heard of another death among the non-inoculated.

In my opinion, inoculation can do no harm at the worst, almost certainly has a protective influence against infection, and certainly diminishes the risk of pulmonary complications.

I am, Sir, yours faithfully.

Birchin-lane, E.C., Feb. 24th, 1919.

C. W. WIRGMAN.

COMMERCIAL VACCINE LYMPHS.

To the Editor of THE LANCET.

SIR,—My experience is very different from that of Mr. E. A. Barton (THE LANCET, Feb. 22nd, p. 313). I was public vaccinator for 30 years and the payment depended upon results—viz., four successful vesicles. I found that the Local Government Board vaccine was not to be relied upon, and I therefore always used Dr. Chaumier's lymph, with such good results that I received four vaccination grants during my period of office. In 1902 I vaccinated or re-vaccinated some 2000, every one successful. Of course, I do not know the present virtue of the vaccine.

I am, Sir, yours faithfully.

Chelston, Devon, Feb. 22nd, 1919.

A. T. ROWORTH.

THE DISCUSSION ON SHOCK AT THE ROYAL SOCIETY OF MEDICINE.

To the Editor of THE LANCET.

SIR,—In THE LANCET report of the recent discussion on shock at the Royal Society of Medicine, from the variety of the opinions expressed, it is evident that there is, as yet, no general agreement in regard to the problem of the "missing blood." This problem is not solved by the assumptions of the speaker who stated that:—

"It is clear that blood must be accumulated or held up somewhere or other in dilated regions of the vascular system. Observations made in the course of abdominal operations give no support to the view that there is any significant degree of dilatation of the arteries or veins of the splanchnic area. The region in question must therefore be that of the capillaries."

It is unsafe to assume that the missing blood must still be in some part of the vascular system, and it by no means follows that, because this blood is not in the splanchnic area, it must be in the capillaries. Very far from convincing is the same speaker's explanation of how blood can accumulate in capillaries without producing cyanosis.

"As regards the absence of marked cyanosis in shock, we must remember that a very small dilatation of the capillaries, if widely distributed, may suck up a large volume of blood."

Scepticism is justifiable in regard to the clinical existence of an accumulation in the capillaries of blood sufficient in amount to be an important factor in shock and yet so widely distributed as to fail to cause cyanosis. Clinically the picture of shock is that drawn by Mr. John D. Malcolm—i.e., a contracted vascular system, a reduced capacity of the whole vascular area, and a diminution of the volume of blood in this area. The problem of the blood deficiency appears to be a question not so much of missing blood as of missing blood fluids, the total volume of the blood being diminished by the escape of blood fluids from the vascular system.

Might not laboratory workers, instead of looking for the missing blood in some part of a vascular system whose cubic capacity is greatly diminished, with advantage turn their attention to locating the missing blood fluids?

I am, Sir, yours faithfully.

Plymouth, Feb. 19th, 1919.

C. HAMILTON WHITEFORD.

The War and After.

THE CENTRAL MEDICAL WAR COMMITTEE: THE INTERESTS OF THOSE WHO HAVE BEEN ON SERVICE.

THE steps which have been taken by the Central Medical War Committee for the members of the medical profession who have been on service have been made the subject of a brief statement of the General Purposes Subcommittee. It may be remembered that Local Medical War Committees were instituted to protect the interests of medical men serving, to coöperate in the choice of those who should serve, and to provide for their medical work during their absence, the organisation areas of the British Medical Association being employed for the purpose. The Local Committees arranged a general agreement, under which half fees would be paid over by the practitioner remaining behind to the medical man on service, the patient to be handed back on return from service. Further, it was generally agreed that the substitute medical man should not attend the original patients of a medical man, who had been on service, for one year from the original doctor's return.

In two other directions was an attempt made to safeguard the position of those on service: regulations under the Insurance Act were made abrogating during the war the right of insured persons to change from the list of an absent doctor: all Government Departments consented to approve the making of only temporary appointments during the war.

With regard to the position after demobilisation, a scheme was laid down which provided for priority on personal grounds, the primary consideration being length of service.

The statement continues as follows:—

In December last the Committee wrote to all the Government Departments which have medical work at their disposal urging that preference should, wherever possible, be given to doctors who have served. The Committee emphasised the need for this work being available during the first few months after the demobilised doctor's return, while he was building up his practice. The War Office, the Ministry of Pensions, the Ministry of National Service, and the Local Government Board all expressed their cordial agreement with this principle, and promised their support.

At the same time the L.M.W.C.s were informed of this step and were asked to help any man to secure such work who, on his return, expressed his desire for it. It was pointed out that vacancies should be made wherever necessary by the retirement of those who now hold the posts but who have done no service.

Any doctor who now returns and who wishes for local work of this kind should apply: (a) for military work to the D.D.M.S. of the Command, stating his service, and asking to be given any local work which may be available; (b) to the secretary of the L.M.W.C. (name and address will be supplied on application) asking that the name of the applicant be placed on the list of those available for Pensions Boards or any similar work for which local practitioners are being employed.

So far as whole-time appointments are concerned, with the exception of an uncertain number which will be made by the Ministry of Pensions, the Committee knows of none except those connected with the local public health and education authorities. The latter are advertised in the medical journals, and the Central Government Departments concerned are being asked to press on the local authorities the necessity for stating that men who are on service may apply, though they have not yet been demobilised. Application should be made to the Ministry of Pensions for information about pensions medical appointments. Many applicants seem to be under the impression that the Ministry of National Service and the Ministry of Health have, or may shortly have, numbers of appointments of an administrative kind. There is no reason for this belief. The Ministry of National Service is shortly coming to an end, while the Ministry of Health is not yet in existence.

The experience of the Committee goes to show that doctors who return to civil life should have little difficulty in finding work, though it may be difficult for them to find just the kind of work they would prefer. Before the war the annual normal supply of doctors was hardly keeping pace with the demand, so there is little doubt that for some years to come there will be work for all. For five years the normal supply of fresh blood for the profession has been flowing into the services; consequently there are now many openings in all kinds of practice, but particularly, of course, in general practice. Moreover, during the years of the war

the death-rate of the profession, both in and out of the services, has been higher than normal, and there are many doctors who in the ordinary course would have retired from practice, but who have carried on and are now anxious to be released. The Committee must refer men who are on the look-out for such openings to the usual channels—the deans of medical schools, the columns of the medical journals, and the advertisements of medical agents.

The Committee has borne in mind the post-graduate training of medical men who have served, and the question of the retention of commissions and pay during such courses is under consideration.

Arrangements have also been made by the Fellowship of Medicine with the medical schools in London for an emergency post-graduate course of three months for qualified medical men belonging to the Medical Services of the Royal Navy, Army, Air Force, the Overseas contingents, the United States, and Allies. Officers joining the course will be admitted to the general practice of the hospitals, including the clinical work of the wards and out-patient departments, clinical lectures and demonstrations, post-mortem demonstrations, and laboratory work. Tickets for the whole course or for two or three months are issued at the rate of £3 10s. for each month. Particulars can be obtained from the Secretary of the Fellowship, 1, Wimpole-street, London, W.1.

With respect to financial assistance the statement of the General Purposes Subcommittee of the Central Medical War Committee runs as follows:—

War Emergency Fund of the Royal Medical Benevolent Fund.

Hon. Sec., Major G. Newton Pitt,
11, Chandos-street, Cavendish-square, W.

This Fund is prepared to give grants in respect of rent, insurance, taxes, family maintenance, and education. The circumstances should be stated to the hon. sec., in a letter marked "Confidential," and applicants need not be deterred by the fear of publicity. The application is investigated by one member of the committee and laid before the executive committee anonymously. Nor need applicants be deterred by any feeling that they are asking for "charity." A considerable sum has been subscribed, mainly by members of the medical profession, and it was intended to be used, and will be used, to help men who need such assistance either during their term of service or on their return without any question of "charity."

Civil Liabilities Committee.—Grants of not more than £104 per annum can be made to officers or ex-officers of rank not above Captain to meet serious hardship due to (a) rent; (b) interest, instalments on loans, including mortgages; (c) instalments on purchase of house or furniture; (d) taxes; (e) rates; (f) insurance; (g) school fees; (h) maintenance of children.

Forms of application may be had from Army Agents or from Military Service (C.L.) Committee, Imperial House, Kingsway, W.C.

THE CASUALTY LIST.

The names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Lieut. W. M. Crombie, I.M.S., was a student at St. Thomas's Hospital, London, and qualified in 1916. After holding an appointment at St. Thomas's Hospital he joined the R.A.M.C. and later the I.M.S.

Capt. J. J. Dwyer, D.S.O., R.A.M.C., qualified in Ireland in 1909 and held appointments at the West Kent General Hospital, Maidstone, and at the Chelsea Hospital for Women. Prior to joining the R.A.M.C. he was in practice in Brompton-square, London. He died at Calais from pleurisy.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualties among the sons of medical men are reported:—

Second Lieut. J. G. Grant, Liverpool Scottish Regiment, died at Banahory of illness contracted on active service, son of the late Dr. Grant Bey, of Cairo and Aberdeen.

U. G. Murray, died from pneumonia following influenza whilst doing duty at a Y.M.C.A. hut at Winchester, eldest son of Temp. Col. G. R. Murray, A.M.S., of Bowdon, Cheshire.

Lieut. W. M. Crombie (see above), who died in London from influenza contracted in Baghdad, was the eldest and only surviving son of the late Dr. J. Crombie, of Sidcup.

The Municipal Council of the City of Dublin has made "epidemic influenza" and "septic pneumonia" compulsorily notifiable as an emergency measure for a period of six months.

Obituary.

HARRY BLAKEWAY, B.Sc., M.S. LOND., F.R.C.S. ENG.,
RESIDENT ASSISTANT SURGEON, ST. BARTHOLOMEW'S HOSPITAL.

INFLUENZAL pneumonia has claimed another member of the staff of St. Bartholomew's Hospital. Harry Blakeway was the son of James Blakeway, of Stourbridge, and was educated in his native town before coming up to a brilliant career in London University. Having determined to spare no pains in preparing himself for a medical career, he started by taking a science degree in 1905. After carrying off most of the prizes and scholarships available to students at St. Bartholomew's Hospital, he qualified M.B., B.S. in 1908 and took the highest distinctions in surgery at the University and at the Royal College of Surgeons of England two years later. In conformity with a usual practice, he became house surgeon to the Great Northern Central Hospital before returning to his own school, where he was successively house surgeon, demonstrator of anatomy, surgical registrar, temporary assistant surgeon, finally occupying the emergency war-time post of resident assistant surgeon. Of his occupancy of this post a colleague (R.M.V.) writes:—

"During the last years of Blakeway's life he was one of those to whose lot it fell to remain out of the hustle and turmoil and interest of the war, and he laboured unceasingly and untiringly at the less glorious but none the less essential work in the school of his adoption as resident assistant surgeon. Much of the weight of the civilian practice of the hospital fell on his shoulders and he worked nobly and well to maintain the high standards of the past."

This appointment left him but little time to work at the surgical diseases of children and the treatment of hernia, subjects in which he took peculiar interest, but he was surgeon in charge of out-patients at Victoria Hospital for Children and assistant surgeon to the City of London Truss Society. Blakeway's signed writings are limited to a number of brief but well-digested papers on surgical topics, including his Hunterian Lecture on the Operative Treatment of Cleft Palate delivered in 1915; but he was widely read in surgical literature and was a valued author of unsigned reviews in our own columns.

His early death after a career of strenuous work in which he attained to a high degree of professional skill and ability is a severe loss to St. Bartholomew's Hospital and to surgical practice as a whole. Although for Blakeway work was its own reward and he laboured for no other, his friends must regret that he did not live to reap the benefit of years of unending toil. In him surgery has lost a straight and earnest disciple, and his colleagues mourn a good and genial friend. He leaves a widow and three children, to whom we tender our heartfelt sympathy.

CHARLES M. BENSON, M.D. DUB., F.R.C.S. IREL.,

SURGEON TO SIR PATRICK DUN'S HOSPITAL, DUBLIN.

WE regret to announce the death of Mr. Charles Molyneux Benson, which occurred at his residence, 72, Lower Baggot-street, Dublin, on Feb. 16th from pneumonia following influenza. Mr. Benson, who was only 41 years of age, was a son of Sir Ralph Benson, a member of the Indian Civil Service, and received his professional education at Trinity College, Dublin, and the Royal City of Dublin Hospital. He was appointed assistant surgeon to Sir Patrick Dun's Hospital some ten years ago, and succeeded the late Sir Charles Ball as surgeon in 1916. He served in the Royal Army Medical Corps in France in 1917-18. He had been for several years secretary to the Council of the Royal College of Surgeons in Ireland, a post which brought him into official contact with all branches of his profession. And few medical men in Dublin had gained more fully the personal esteem of his colleagues. Modest and unassuming, of a high sense of honour and professional rectitude, his manner was the spontaneous expression of his kindly and frank spirit. The sympathy of his colleagues goes whole-heartedly to his widow and young children.

QUEEN'S UNIVERSITY, BELFAST.—Colonel Thomas Sinclair, C.B., professor of surgery, has been elected registrar of Queen's University, Belfast, in place of Professor J. Symington, resigned.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Ministry of Health Bill.

THE House of Commons on Wednesday, Feb. 26th, gave a second reading to the Ministry of Health Bill. The debate extended over the whole of the sitting, and, speaking broadly, the reception given to the measure was most favourable. Formal permission was given to the Committee which will deal with the Bill to extend it to Ireland. A separate Bill will now be introduced for Scotland.

The Evils of Unqualified Dental Practice.

The Report of the Committee appointed by the Lord President of the Council to inquire into "the extent and gravity of the evils of dental practice by persons not qualified under the Dentists' Act" has been presented to Parliament during the week and is now publicly circulated. It may be remembered that the Committee, which was presided over by the Right Hon. F. D. ACLAND, and included among its members Mr. C. S. TOMES, Sir ARTHUR NEWSHOLME, and Sir GEORGE NEWMAN, had for its terms of reference to inquire into: (1) the causes of the present inadequate supply of qualified dentists; (2) the expediency of legislation prohibiting unqualified practice; and (3) the practicability of modifying the existing course of study, diminishing the time and cost involved in training, without impairing efficient practice. The Report claims for dentistry the position of being one of the chief, if not the chief, means for preventing ill-health, and marshals clearly the powerful arguments for alike increasing the supply of qualified dentists and minimising the evils arising from quackery.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 19TH.

Ireland and the Ministry of Health.

Major ASTOR (Parliamentary Secretary to the Local Government Board) informed Mr. LYNN that the Chief Secretary for Ireland was proposing on the following day to confer with honourable Members interested in regard to the application of the Ministry of Health Bill to Ireland.

Rabies in Devon and Cornwall.

Answering Mr. CAREW, Sir A. GRIFFITH-BOSCAWEN (Parliamentary Secretary to the Board of Agriculture) said: At present the outbreak of rabies in Devon and Cornwall cannot in any sense be said to be stamped out. The disease may show itself at any time within six months of its inception. The last case was confirmed on Feb. 11th, and, in addition, there is still a number of suspected cases under investigation by the Board's Veterinary Department. The total number of cases confirmed by the veterinary officers of the Board to date is 118—Devon 94, Cornwall 24. The Board has reason to think that the responsible local authorities are carrying out their duty as efficiently as their staff permits. I am informed that to date 18 civilians, 2 soldiers, and 1 sailor have been bitten and undergone the Pasteur treatment for hydrophobia.

Mr. LAMBERT: Can the honourable gentleman say whether generally rabies in these two counties is decreasing or increasing?—Sir A. GRIFFITH-BOSCAWEN: On the whole, it has been better recently, but it is by no means stamped out.

Medical Treatment of Discharged Soldiers.

Replying to Mr. DEVLIN, Sir J. CRAIG (Parliamentary Secretary to the Ministry of Pensions) wrote: In Great Britain all men, whether insured or not, who are invalided from the forces or certified on demobilisation to be impaired in health by reason of their service, are entitled to free medical benefits under the National Insurance Acts—that is, to the services of a general medical practitioner and the supply of medicines, except in the case of uninsured men whose total income exceeds £160 a year. There is no medical benefit under the Insurance Acts in Ireland, but by special arrangements with the Irish Insurance Commissioners, which came into force in October, 1918, provision similar to the above was extended to Ireland, so far as invalided men are concerned, and the question of extending the arrangements to men in impaired health on demobilisation is at present under consideration.

Accommodation for the Mentally Deficient.

Mr. HERBERT asked the Home Secretary whether he was aware of the inadequate accommodation for mentally deficient persons throughout the country; and whether he would direct the Board of Control to exercise their powers under the Mental Deficiency Act, 1913, to provide suitable homes for those mentally deficient persons whose neglected

supervision was likely to be a danger to the community.—Mr. SHORTT answered: The answer to the first part of the question is in the affirmative. The provision of accommodation for mental defectives under the Act of 1913 rests with the local authorities, and has necessarily been largely suspended during the war. The Board of Control is, however, fully alive to the urgent need for further accommodation, and a circular letter to local authorities on the subject will be issued in a few days.

THURSDAY, FEB. 20TH.

Supply of Spirits.

In reply to Colonel ASHLEY, who asked whether the inhabitants of the districts round Preston were unable to obtain spirits in cases of sickness, especially in the case of influenza and pneumonia, when the same was prescribed by the local medical men and a medical certificate given, Mr. McCURDY (Parliamentary Secretary to the Ministry of Food) said: In view of the limited supplies available, it was found impracticable to carry out the arrangement contemplated with reference to the supply of spirits to specific districts on medical grounds. The whole question of the release of spirits is now before the War Cabinet.

Assistant Medical Officers of Asylums.

Sir WATSON CHEYNE asked the Home Secretary whether he was aware that assistant medical officers of asylums were not allowed to marry, and if so, whether that rule would be rescinded.—Mr. SHORTT replied: Any rules governing the conditions of service of medical officers of asylums are made by the visiting committees who manage the asylums and appoint the officers. I am informed that there is no general rule preventing the marriage of assistant medical officers, but the possibility of the marriage of assistant medical officers is largely dependent on the nature of the residence provided for them at the asylums, and in the large majority of cases the accommodation is only suitable for an unmarried officer. The Board of Control have used their influence in the direction of securing the provision of such accommodation as will enable the senior assistant medical officer, and in large asylums the second assistant medical officer, to marry. Separate houses have been provided with this object in the grounds of some ten county asylums, including four of those belonging to the London County Council.

Influenza.

Mr. RAMSDEN asked the President of the Local Government Board whether his department was in possession of information based on experience in other countries showing any efficacious means of dealing with the persistence of influenza; and whether any definite statement could be made as to the value of inoculation.—Dr. ADDISON replied: Reports and publications issued in other countries regarding the prevention of influenza are specially collected and considered in the Local Government Board's Medical Department. In answer to the second part of the question, I may refer the honourable Member to the Memorandum I have already promised to publish this week.

Mr. NEVILLE CHAMBERLAIN asked whether the right honourable gentleman was aware that one of the principal causes of the loss of life in the influenza epidemic had been the lack of trained nurses; whether his attention had been called to the fact that there were in France and Egypt a large number of nurses who had little or nothing to do, but who had not been demobilised because they had no fixed employer who could apply for them; and whether, in view of the renewed epidemic of influenza, he would make representations to the Secretary for War to have some of these nurses released at once.—Dr. ADDISON answered: I am aware that one of the principal needs in the medical treatment of influenza is competent nursing, and I am referring the proposal made in my honourable friend's question to the authorities responsible for demobilisation. The honourable Member is aware that local authorities and nursing associations, and not the Local Government Board, are responsible for the provision of nursing facilities.

Glen Lomond Sanatorium.

Colonel Sir A. SPROT asked the Secretary for Scotland whether, in view of the importance of the treatment of tuberculosis, he would take the necessary steps to have the sanatorium at Glen Lomond, which was established by the counties of Fife, Kinross, and Clackmannan as a tuberculosis sanatorium, but was now occupied by the War Office, restored to the local authorities without further delay.—Mr. MUNRO answered: Arrangements are being made in consultation with the War Office with a view to the early restoration of this sanatorium to the local authorities.

MONDAY, FEB. 24TH.

Demobilisation of Panel Practitioners.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board to state the number of medical men on the panel lists on the date of the signing of the

armistice and the number of doctors who had been demobilised since that date; and what steps he was taking to secure a more efficient medical service for insured persons by obtaining an early demobilisation of medical men.—Major ASTOR replied: The number of practitioners working for the Insurance Committees in England on Oct. 1st, 1918, was 8084, besides a certain number holding commissions in the R.A.M.C. who were free to do some part-time work for their Committee. Since Nov. 11th the number of insurance practitioners on panels in England who have been notified to the Commissioners by the War Office up to Feb. 21st as definitely released from service is 647. In reply to the last paragraph of the question I must remind the honourable Member that the responsibility for arranging with the Military, Naval, and Air Force authorities for the demobilisation of doctors needed for the civil population rests with the Ministry of National Service. My Department makes periodical representations to that Department for expediting the rate of release of doctors for civil needs and for securing the release of particular doctors required for specially urgent necessities in individual areas. The Commissioners are in constant communication with the various Insurance Committees as to the needs of their areas in this respect. I am sending the honourable Member copies of circulars addressed to these Committees which will explain the procedure adopted since the armistice.

Influenza.

Answering Sir KINGSLEY WOOD, who asked a question bearing on the measures taken to circumscribe the infection of the present influenza epidemic, Major ASTOR said: It is, of course, desirable to circumscribe infection as far as practicable, and as to the various measures which may be adopted, perhaps I may refer to the Memorandum on influenza which has been prepared by the Medical Department to the Local Government Board and issued last week. The Board's medical officers advise that notification of all cases throughout the country at the present time would not provide an effective means of controlling the spread of the disease and that any advantages which such notification would have would be outweighed by the additional burden placed on medical men and health officials. Influenza pneumonia has, however, been made notifiable as from March 1st, with the special object of enabling assistance to be given in cases of need of nursing or home assistance which local authorities can provide or assist in providing. It is possible that influenza may be spread by handling articles of food and drink, but it does not seem practicable to remove this risk by legislative action.

Discharged Tuberculous Soldiers.

Lieutenant-Colonel RAW asked the Leader of the House whether he would arrange for a Select Committee to be appointed to consider the best means of giving immediate treatment to ex-service tuberculous soldiers and sailors.—Mr. BONAR LAW replied: The Government is already considering the best means of carrying out what my honourable and gallant friend has in view.

TUESDAY, FEB. 25TH.

Demobilisation of Medical Men.

Viscount WOLMER asked the Secretary for War whether it was a fact that among the medical officers now serving with the armies of occupation there were a number of obstetric surgeons and recognised specialists in infant welfare; and, if so, whether he would give instructions that these officers should be speedily demobilised so that their special knowledge should find wider scope than was likely in their present employment.—Mr. CHURCHILL replied: Individual medical officers are demobilised at the request of the Ministry of National Service, and the selection does not rest with the military authorities. I may add, however, that the rate at which doctors of all kinds are being demobilised is by no means satisfactory, and I have given directions which I trust will result in a substantial acceleration.

Medical Men and Income-tax.

Sir WATSON CHEYNE asked the Secretary of State for War whether he had given personal consideration to the claim of medical men who, without holding commissions in the Army, had been and were engaged under the War Office in service in Army hospitals to the special service rate of income-tax; whether that claim was to be conceded; and, if not, on what specific ground was it refused.—Captain GUEST (who replied) said: So far as the War Office is concerned this is a question of complying with the law and the action taken has been based on legal advice.

Sir WATSON CHEYNE asked whether the War Office would not bear the costs of a test case.—Captain GUEST: That seems rather to be a matter for the Treasury.

Spirits for Medical Use.

Colonel ASHLEY asked the Leader of the House why the promise made by the Government in November and December last that spirits should be released for use in

case of sickness when ordered by a medical man had not been carried out.—Mr. BONAR LAW replied: I am glad to say that the Cabinet have decided that spirits shall now be released up to 75 per cent. instead of 50 per cent. of the quantities released in 1916 and that considerable additional quantities will therefore be available.

WEDNESDAY, FEB. 26TH.

Ministry of Health Bill (Second Reading).

Dr. ADDISON (President of the Local Government Board), in moving the second reading of the Ministry of Health Bill, said that at present our practice was behind our knowledge, and he wished to have them in accord. He spoke of the negotiations relative to the measure in which he had taken part, and said he found much agreement with its main objects, but there were many "buts," and on investigation these showed that there was always an axe to grind. Dr. Addison described the main proposal of the Bill as being designed to fix the responsibility with a central authority, to unify control, and to have a common direction and policy. All departments were to join in the effort to save the country from the danger to which it was open during the period of demobilisation on account of the risk of the introduction of tropical diseases hitherto not in existence here. The Bill provided for setting up a central organisation which would have transferred to it the duties of the Local Government Board and its powers in regard to public health, the duties of the Insurance Commissioners, and also the powers of the Board of Education with regard to mothers and nursing children, the powers of the Privy Council under the Midwives Act, and the administration of Part I. of the Children Act in respect of infant life protection. These matters were regarded as sufficient to tackle at the beginning of the Ministry, but later on it was proposed to take powers in regard to mental defectives, the functions of the Pensions Ministry in connexion with disabled soldiers, and the duties of the Board of Education in connexion with medical inspection. The reason why it was proposed to transfer the Central Medical Research organisation to the Privy Council was because it was a common service of all departments. The reason why the Bill did not apply in many respects to Ireland was because the system there was different. He was prepared to make it applicable to Ireland as far as he could in Committee. There had been criticism of the setting up of the Advisory Committees, but he thought they would keep the Minister up to the mark.

Sir DONALD MACLEAN welcomed the proposals coördinating child welfare, but did not see why the medical side of the factory work of the Home Office was not to come under the Ministry.

Sir E. CARSON protested against the fact that the Bill did not apply to Ireland.

Mr. J. H. THOMAS was glad a change was proposed in regard to the Poor-law, which stank in the nostrils of progressive people.

Mr. DEVLIN claimed that Ireland, equally with Scotland, was entitled to a separate Bill.

Mr. SAMUELS (Attorney General for Ireland) repudiated the suggestion that the Irish Government had been careless in making inquiry in the matter. It was the intention of the Irish Government to see that all ameliorative measures for the health of the people in England and Wales would be applied to Ireland. So far as the central machinery was concerned the Irish position was ahead of the English. Where they had broken down in Ireland was that the local administration which had to deal with the practical matters was permissive, and being permissive, the result had been that the people who had the permissive power to put it into operation or not had lamentably failed. There was a Bill in preparation conferring on the Irish Local Government Board powers similar to those of the Board of Education regarding medical inspection and treatment of children. He hoped there would soon be a measure which would deal with the terrible state of public health in Ireland, to see that it was enforced, and that those entrusted with the administration of it should carry out their powers.

Sir WATSON CHEYNE said this was a Bill which he believed, when suitably amended, would form the basis of the erection of a great health organisation. In regard to the machinery of the Bill he laid down the axiom that the health of the people was a matter of national concern rather than of sectional and vested interests. His idea of a Ministry of Health was that they should have a central brain, thinking, investigating, co-relating information from other sources, and spreading information. That brain would have a great deal to do. As a secondary thing to that there would be executive branches which would carry out the information which emanated from the thinking body and apply it to the various local conditions. Without the central brain the organisation they would establish now would in a very few years be out of date because of the advances of medical science. He should like Dr. Addison to consider whether

he should not have a board between the advisory bodies and himself, a board which could co-relate the reports that came from the advisory bodies and then the Minister could digest them. He could not see a Ministry of Health without a research department. He did not believe it would come to anything. The medical profession was in a state of great uneasiness and distress about the Bill, and it would go far to relieve their minds and get more cordial working if they could get an advisory body which was very carefully selected and which could be trusted by the profession and represent the best elements in it. He wished to ask for an assurance that anything of far-reaching importance like, for instance, the taking over or interfering with the great hospitals and teaching schools, would be brought before Parliament, so that they might have an opportunity of discussing it and, if necessary, throwing it out. As far as the medical men in the House were concerned, and he thought as far as the greater part of the profession was concerned, they were sincerely anxious that the Bill should be a great success, and they would do all they could to further it.

Mr. THOS. GRIFFITHS appealed to Dr. Addison on behalf of the Welsh people to give the same treatment to Wales as was to be given to Scotland.

Mr. LESLIE SCOTT urged that the subject of mental deficiency should be taken over by the Ministry of Health when created from the commencement.

Captain LOSEBY said the country was not satisfied with the present method of licensing medical practitioners. The public had a right to claim that those responsible for the health of the nation should be competent to carry out their task, not only at the time of their qualification, but also during the whole period of practice. Something in the nature of refresher courses might be organised.

Dr. McDONALD heartily approved of the Bill, which was designed to improve public health.

Major FARQUHARSON also spoke in favour of the Bill.

Major MOLSON regretted that the Bill did not take under its care the Medical Research Committee.

Colonel RAW approved of the Bill, but regretted it did not take in the Medical Research Committee.

Major ASTOR (Parliamentary Secretary to the Local Government Board), replying to the debate, said that the Government meant the Bill to be a real one. They would dip into the public purse for it, and it would be money well spent. He was sure that local authorities would get more guidance from a single department than they had got in the past. As to the position of the Medical Research Committee under the Privy Council, he said that research over the widest field should not be limited to a department which only included England and Wales in its survey. But the Privy Council covered, not only the United Kingdom, but would be in touch with the whole British Empire. Far more progress would be made in this way. Topical research, if he might call it so, was carried on by the Local Government Board, and would remain there. But all departments would more readily come to the Privy Council. The Medical Research Committee had come to the conclusion that it would be in the interests of research that the course proposed in the Bill was the right one. In conclusion, he paid a tribute to the efforts of the late Lord Rhondda for his steady advocacy of the establishment of a Ministry of Health. Since the beginning of the war the country had lost a quarter of a million infants because of bad ante-natal and post-natal conditions. There was a need for a Ministry of Health before the war. It was doubly necessary now.

The Bill was read a second time.

On the motion of Captain CRAIG, an instruction was agreed to giving the Committee on the Bill power to extend the Ministry of Health Bill to Ireland.

Separate Bill for Scotland.

At question time Sir H. DALZIEL asked the Secretary for Scotland whether he had received an intimation to the effect that Members representing Scotland were unanimous in their demand that a separate Health Bill should be introduced applying to that country, and, with a view to saving the time of the House, could he now state what the intentions of the Government were in the matter.—Mr. MUNRO replied: I have received an intimation of the general opinion held by Scottish Members in this matter, and I have discussed it with the Leader of the House. In view of the change of procedure which was adopted last week, the Government have decided to withdraw the Scottish Application Clause from the Bill, to amend its title accordingly, and to introduce a separate Bill dealing with Scotland only.

A CONFERENCE on "Influenza and its Prevention," arranged by the council of the Institute of Hygiene, meets at the Institute, 33, Devonshire-street, London, W.1, at 3.30 P.M. this (Friday) afternoon. Sir Malcolm Morris will occupy the chair.

Medical News.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster, on Feb. 20th, with Sir Francis H. Champneys in the chair.—A letter was considered from the county medical officer of health for Cheshire inquiring whether nurse midwives in attending on, or expecting to be called to, cases of confinement should be permitted to attend cases of influenza, and if so under what conditions. The Board decided that the county medical officer of health for Cheshire be informed that in the view of the Board his attitude with regard to cases of influenza attended by midwives who also attend maternity cases, as detailed in his letter of Dec. 27th, 1918, is correct and strictly in accordance with the rule of the Board E. 6.—A petition was presented from the Midwives Institute praying the Board to represent to the Privy Council under Section 1(c) of the Midwives Act, 1918, that it is expedient to modify the constitution of the Board by conferring on the Institute power to appoint a certified midwife as one of its representatives on the Board. The Board decided that the secretary be directed to acknowledge the petition.—The Board having considered the question of printing the Midwives Roll for 1919 decided that having regard to the special circumstances of the case, and particularly to the great expense involved in printing the Midwives Roll at the present time, the Roll for 1919 be not printed, but that the Provisional Roll for 1919 be printed as usual.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee, held on Feb. 11th, 18 cases were considered and £193 6s. voted to 15 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 69, of M.R.C.S. Eng. who was a surgeon in the Royal Navy for 21 years and then practised in Cornwall and died in November, 1918. Was left without means and has an invalid daughter, aged 43. Rent and rates £18 a year. Had some temporary assistance from friends. Husband's income ceased at his death. Voted £18 in 12 instalments.—Widow of M.R.C.S. Eng. who practised in Manchester and died in 1913. Was left with four children, ages now 11-23. Has a house, which lets at £25 a year, and small cottage, now unoccupied. Applicant works as a sickness visitor and receives £84 10s. a year. Receives from children £104. Rent £25. One daughter has been ill for three months. Wants help for the education of the youngest child. Voted £6 6s.—Widow, aged 44, of M.B. Lond. who practised in Cheshire and died in 1907. Was left with two boys, now aged 12 and 14. Applicant acts as matron of a day and resident nursery and receives £60 a year. Youngest boy lives with her at present, but this privilege is not likely to be continued. Eldest boy earns 9s. per week, but mother has to supplement this by 11s. per week. Wants help for youngest boy's school fees. Was helped by the Fund in 1911 and 1912, £10 each time. Voted £10.—L.R.C.P. & S. Edin., aged 72, married, who practised at Dovercourt. Has one daughter, aged 32, who helps at home. Has lost an annuity of £180 through the war. Earns £102 from practice, less £12 for drugs. Has received £39 from the National Relief Fund, and an annuity of £8. Rent £35 per annum. Voted £10.—Widow, aged 37, of L.R.C.P. Edin. who practised at Battersea and died in 1917. Applicant left with three children, ages now 3-11, the two eldest going to school. She has been living on the capital left by her husband, which is now nearly exhausted. Weekly home expenses £3. Rent 11s. Voted £10.—M.R.C.S. Eng., aged 73, widower, who practised in Devonshire and as a ship's surgeon. Income £30 from another charity and £19 from relative. Was torpedoed in 1917, and as a result of exposure suffers from rheumatism and asthma. Relieved three times, £11. Voted £12 in 12 instalments.—Orphan, aged 13, of L.R.C.P. Edin. who practised in Lancashire and died in 1917. Applicant was left with two elder brothers penniless, and friends looked after her. She is now receiving a good education and doing well, and help is asked for towards paying school fees. A grant of £25 was made last year to help her and her brother, who is now earning his living. Voted £15.—Daughter, aged 60, of M.D. Lond. who practised in London and died in 1868. Applicant left without means, and has earned a living by acting as a nurse and housekeeper, but never been able to save. Health now very indifferent and not able to work for any long period. Relieved five times, £24. Voted £12 in 12 instalments.—Daughter, aged 56, of M.R.C.S. Eng. who practised at Hadleigh and died in 1877. Applicant is a chronic invalid, and her only income is from dividends, £18, and R.U.K.B.A. pension, £21. Relieved three times, £26. Voted £12 in 12 instalments.—Daughter, aged 62, of M.R.C.S. Eng. who practised at Box and died in 1894. Applicant is one of three sisters, and they are all delicate. Earns £18 as a companion, and has £12 from another charity. Another sister, who is unable to work, receives help from the Fund and Guild. Relieved five times, £24. Voted £18 in 12 instalments.—Daughter, aged 56, of M.R.C.S. Eng. who practised in London and died in 1880. Applicant is a chronic invalid and unable to work, and lives with a widowed sister. Her only income is a pension from the R.U.K.B.A. of £25. Relieved eight times, £26. Voted £12 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

A PRESENTATION will be made to Dr. H. J. Cardale, chairman of the London Panel Committee, at a luncheon to be held at the Holborn Restaurant on March 4th, at 1.45 P.M., Sir James Galloway in the chair.

A MEETING was held at the Wigmore Hall, London, on Sunday last, Feb. 23rd, under the auspices of the Medico-Political Union and the chairmanship of the President of the Union, Mr. Frank Coke, at which the following resolution was proposed:—

That in view of the far-reaching changes inevitable in the medical services of this country consequent on the coming Ministry of Health, it is essential that the profession should be solidly and democratically organised on a trade-union basis to enable it to negotiate effectively with the Government in the interests of the community no less than those of the profession.

The resolution was moved by Dr. J. A. Angus and eloquently seconded by Dr. E. H. M. Stancomb. An amendment for the insertion of words whereby a union should be formed on trade-union principles and be affiliated to the Labour Party and to the Trade Union Congress, having been unsuccessfully brought forward, the original resolution was carried by a majority of 207 to 30.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—A quarterly meeting of the association was held in the rooms of the Medical Society of London on Feb. 20th, Dr. John Keay presiding. A message of greeting from the Medico-Psychological Society of Paris was read, and a suitable letter drafted in response. The resignation of Dr. R. H. Steen as general secretary was accepted with regret, and Dr. R. Worth elected in his place. Dr. E. P. Cathcart read a communication on Psychic Secretion.

At a public meeting of the subscribers and supporters of the Aberdeen War Dressings Depot, held in the town hall on Feb. 22nd, it was decided that the surplus funds of the society should be disposed of by giving £1200 to endow a bed in the Royal Infirmary, to be used, if necessary, for the treatment of pensioners, and the remaining £177 to the Sick Children's Hospital, which gifts would constitute a permanent war memorial of the work of the War Dressings Depot. This society has had subscribed to it in all £11,853, and has contributed 2,156,842 dressings and other necessary articles, and in the early days of war did a great deal towards the standardising of war dressings.

MEDICAL DEFENCE UNION: THE NOTIFICATION AND PREVENTION OF SPECIFIC DISEASES.—The following resolutions were passed unanimously, on Feb. 20th, at a meeting of the Council of the Medical Defence Union, Sir John Tweedy presiding:—

"That resistance to notification should be urged upon the medical profession, as being not only a breach of the confidence which exists between patient and doctor, but also that notification would lead to concealment of disease."

"That the profession be encouraged to recommend to patients the adoption of the very simple and easily carried out measures of prophylaxis, which have been proved to be effective in the Army and Navy."

HOSPITAL ACCOMMODATION: ADDRESS BY SIR E. NAPIER BURNETT.—On Feb. 20th there was a large gathering of medical men and others in the library of the Royal Victoria Infirmary, Newcastle-on-Tyne, to hear an address by Sir E. Napier Burnett on Hospitals and their Relation to the State. The chair was taken by Professor Rutherford Morison. After recounting his recent experience in military hospital administration the lecturer dealt with the shortage of accommodation in the civil hospitals of the country and with the loss entailed by the necessity for waiting lists. A resolution was unanimously carried urging the Government to hold a comprehensive inquiry into the present hospital accommodation. On the same evening Sir E. Napier Burnett was entertained by the members of the North of England Glasgow University Club at a complimentary dinner.

Appointments.

GOULDER, C. B., M.D. Camb., has been appointed Assistant Surgeon to Royal London Ophthalmic Hospital (Moorfields Eye Hospital).
SIMPSON, J. A., M.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Alford District of the County of Aberdeen.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. P. and Two Asst. S.
Aylesbury, Royal Buckinghamshire Hospital.—H.S.
Birmingham General Dispensary.—Res. M.O. £380.
Blackpool, Victoria Hospital.—H.S. £250.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. £150.
Bournemouth, Royal Victoria and West Hants Hospital, Boscombe Branch.—H.S. £200.
Bradford Children's Hospital.—H.S. £170.
Chartham, near Canterbury, Kent County Lunatic Asylum.—Med. Superintendent. £800.

Chichester, Royal West Sussex Hospital.—H.S. £200.
Dartford, Darent Industrial Colony.—Temp. Asst. M.O. £77s. p.w.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
East African Medical Appointments.—M.O. £400-£500.
Fife-shire Education Committee.—Asst. M.O. £400.
Hereford, Herefordshire General Hospital.—H.S. £200.
Herefordshire County Council.—School Dentist. £350.
Holborn Schools, Mûcham.—M.O. £130.
Hospital for Diseases of the Throat, Golden-square, W.—Hon. Anæsth. and Hon. Registrar.
Hospital for Sick Children, Great Ormond-street, W.C.—P.
Hull and Sculcoates Dispensary.—M.O.
Huntingdon County Hospital.—Res. M.O. £120.
Johannesburg, South African School of Mines and Technology.—Prof. of Anat. and Prof. of Phys. £1000.
Leeds Public Dispensary.—Three Hon. Asst. Dental Surg.
Leicester Corporation Isolation Hospital and Sanatorium.—Two Res. M.O. £350 and £300. Also Female M.O. £400.
Liverpool, Royal Southern Hospital.—Three Res. H.S., Two H.P., and One non-Res. C.O. £100.
London Homœopathic Hospital, Great Ormond-street, Bloomsbury, W.C.—Clin. Path. and Bact. £200.
Manchester Children's Hospital, Pendlebury, Out-patients' Department, Gartside-street, Manchester.—Asst. M.O. £200.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—H.S. £150.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Nottingham Children's Hospital.—Female Res. H.S. and Res. H.P. and Anæsth. £250 and £200 respectively.
Nottingham City Asylum.—Second Asst. M.O. £300.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—H.S. and Cas. H.S. £100. Also Temp. Asst. P., and Asst. for Out-patient Cases.
Reading, Royal Berkshire Hospital.—Second H.S. £200.
Royal National Orthopædic Hospital.—Res. H.S. £200.
Samaritan Free Hospital for Women, Marylebone-road.—H.S. £150.
Scarborough Hospital and Dispensary.—Two H.S.
Shantung Christian University Medical School (Tsinanfu, N. China).—Medical Missionaries.
Sheffield Royal Hospital.—Cas. Officer. £130.
Sheffield Royal Infirmary.—Cas. Officer. Also Oph. H.S. £150.
Staffordshire Education Committee.—Female Asst. M. Inspectors. £400.
Stockport Infirmary.—Jun. Res. H.S. £200.
Union of South Africa Mental Hospital Service.—Six Asst. Phys. £380.
Warwickshire and Coventry Joint Committee for Tuberculosis.—Asst. Tuberc. Officer. £400.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Two Asst. S.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Sheffield, Woburn Sands, Beaminster, and Telgumouth.

Births, Marriages, and Deaths.

BIRTHS.

ALLCHIN.—On Feb. 21st, at Bury-road, Alverstoke, Hants, the wife of Temp. Surg.-Lieut. F. M. Allchin, M.B., B.S., Royal Navy, of a daughter.
DASHWOOD-HOWARD.—On Feb. 19th, at The Mowle, Ludham, Norfolk, the wife of A. Dashwood-Howard, M.D., L.R.C.P., late Captain, R.A.M.C., of a daughter.
EDMOND.—On Feb. 15th, at Cruck Meole House, Hanwood, Shropshire, the wife of Major W. S. Edmond, F.R.C.S., R.A.M.C., of a daughter.
FARMER.—On Feb. 19th, at "Stanwell House," Stanwell, near Staines, the wife of Captain Herbert L. Farmer, R.A.M.C., of a daughter.
TOOTH.—On Feb. 17th, at Clifton Nursing Home, Bristol, the wife of Frederick Tooth, M.R.C.S., L.R.C.P., of a son.
WRIGLEY.—On Feb. 25th, at 8, Conyngham-road, Victoria Park, Manchester, the wife of Captain P. R. Wrigley, R.A.M.C. (T.F.), of a daughter.

MARRIAGES.

JONES-THATCHER.—On Feb. 15th, at St. John of Jerusalem, South Hackney, William Henry Jones, M.B., B.S. Lond., temporary Lieutenant, R.A.M.C., to Gwendolen Frances Mildred, second daughter of the Rev. and Mrs. W. Romaine Thatcher, of South Hackney.
NICHOLAS-HACKING.—On Feb. 18th, at Holy Trinity, Sloane-street, Captain C. F. Nicholas, R.A.M.C., to Ann Kathleen, fourth daughter of the Venerable Archdeacon and Mrs. Hacking, Hill House, Southwell, Notts.

DEATHS.

ANDREWS.—On Feb. 20th, at Galagill, Elstree, Samuel Andrews, M.R.C.S., L.R.C.P. Lond., aged 68.
BOWER.—On Feb. 18th, suddenly, at Barnsbury-road, N., Edward I. Bower, L.R.C.P. Lond., M.R.C.S., L.S.A., aged 69.
MICHAEL.—At Elmwood, Woodthorpe, Nottingham, of bronchitis following influenza, Henry James Michael, Lieutenant-Colonel, R.A.M.C. (retired), aged 62 years.
NIAS.—On Feb. 20th, at a nursing home, Joseph Baldwin Nias, M.D. Oxon., of Rosary-gardens, S.W.
STEPHENSON.—On Feb. 24th, at Bon Accord-crescent, Aberdeen, William Stephenson, M.D., LL.D., F.R.C.S.E., Emeritus Professor of Midwifery of the University of Aberdeen, in his 82nd year.
WISE.—On Feb. 24th, at Dunstons, Launceston, Cornwall, Charles Henry Wise, M.D., J.P. (late of Walthamstow), in his 65th year.
N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

THE VITAL NEED.

Professor F. G. Hopkins, of the University of Cambridge, the pioneer of the vitamine theory, delivered the third of the series of lectures on Physiology and National Needs at King's College on Feb. 19th, his subject being Vitamines, Unknown but Essential Accessory Factors of Diet. In the absence of Lord d'Abernon, the chairman, and of the Principal of the College, both of whom were suffering from the prevailing epidemic, Professor W. D. Halliburton presided. Although man had through the ages accumulated large experience in questions relating to food, yet in the particular matter of nutrition the results of scientific research might forestall experience, which was always slow and expensive. In a community which could command a sufficient variety of fresh food, taste, appetite, and instinct were sufficient to ensure that the individual was properly nourished; but in states of civilisation there was a tendency to interfere with natural foods, and only a proportion of their constituents was presented to the consumer. The science of the nineteenth century had made it clear that it was the quality and not the quantity of food which was all important. The essential elements for human nutrition were proteins, fats, carbohydrates, and a proper supply of mineral salts, but it had been found that an addition to these substances was needed, a something which was produced by plants in appreciable quantities, as well as a something which was developed in small quantities, the nutritive importance of which was out of all proportion to the small amount in which these substances occurred in natural foodstuffs.

Beri-beri.

In many rice-eating communities the population suffered from beri-beri, in which an extreme state of emaciation, paralysis, and pronounced oedema occurred. For many years efforts had been made, but without success, to find a microbic cause for the disease. Damaged rice had been suspected, but it was ultimately found that the trouble was due to the way in which the rice was prepared, an essential factor necessary for food being removed in the course of preparation. In 1897 the Dutch physician Eijkman brought forward evidence to show the truth of this conception. In 37 prisons in the districts which he studied, the diet was unpolished rice; in 13 prisons polished and unpolished rice; and in 51 prisons polished rice. Taking the prison population at nearly 300,000 and collecting the cases per 10,000, there was 1 case among those living on unpolished rice, on the mixed rice there were 416 cases, and on the polished rice 3900.

Experiments showed that the missing element in the rice was to be found in the layer of tissue under the husk which was known as the silver skin, in the embryo, and in the bran. These were left in by the native method of preparation, but removed by the modern milling and polishing process. From these investigations Eijkman concluded that the substance which was removed neutralised another factor in the whole which was harmful; the simple suggestion that something really necessary in itself was removed did not occur to him.

The Vitamines.

The lecturer described some feeding experiments on animals, illustrated by charts thrown on the screen, which showed that if the food consisted of pure proteins, fats, carbohydrates, and mineral salts the animals not only did not thrive, but, after a longer or shorter interval, died, whilst an extremely small amount of an addendum to the diet converted it into a perfectly sufficient nutriment. In some early experiments which he had conducted the addendum consisted of a small quantity of milk. It was essential that these additions to the food should be obtained from living tissue. We did not know what these substances were which we called vitamins. Many patient attempts had been made, and were being made to isolate them, but so far without success, though it was certain that the factors were actual substances and not qualities. They could be extracted, precipitated, and redissolved, but they could not be separated completely from other substances.

Their actual chemical nature and the exact amount necessary for the needs of the body were not known. There were at least three of these substances, each one distinguished from the other two, and each one serving some particular function in nutrition. As a proof that at least two existed, it had been shown that if an animal were fed on the pure diet already referred to, and the fat were an animal fat, growth was inhibited, but on adding watery extracts of various foodstuffs, such as watery extracts of the wheat grain, the cortex or embryo, the animal grew and generally maintained excellent health. This did not occur if a vegetable

fat were used in the diet. Its value to the body as fat was probably just as good as animal fat, but there was something in the animal fat which was not present in the vegetable. Of the two factors, therefore, one was soluble in water and one was associated with fats, and an animal could not survive unless both were present. Dr. Harden, as the result of some admirable work, had shown the distribution of these two factors. Wheat grain, with the exception of the endosperm, contained both and was especially rich in the water-soluble factor, as was also yeast. Butter was rich in both. Cod-liver oil contained a large amount of fat-soluble substance.

Insufficiency Diseases.

The water-soluble substance was removed when rice was polished, and it was the absence of this which caused beri-beri. It was therefore known as an antineuritic substance. Birds were so sensitive [here the lecturer showed on the screen photographs of pigeons in which neuritic disease had been produced by feeding them on unpolished rice] that if suffering from this affection, by administering to them as small a dose as half a grain of the watery extract the symptoms could be abated in the course of an hour or two. Rickets in children, a disease of great national importance, was associated with the fat soluble vitamine. Dr. Edward Mellanby had shown that it was easy to find a food on which dogs would develop rickets, and just as easy to prevent the condition by making certain additions to their diet, among which were certain fats rich in vitamins. That cod-liver oil was a curative agent for rickets had long been known empirically. The negro population of the United States was particularly prone to this disease, and in a community in which almost every child was a victim striking results were obtained by the administration of cod-liver oil. Mrs. Mellanby¹ had shown that grave errors of dentition occurred through diet. Scurvy was another dietetic disease and would be dealt with by Professor Harden on Feb. 26th, when it would be shown that there was at least a third vitamine which was less soluble than the other two, more easily destroyed by heat, and disappeared more readily when foods were kept. Pellagra was another disease which was associated with qualitative deficiency in the diet.

National Importance of the Dietetic Factor.

These facts were of practical and national importance. Pure white bread did not contain either of the two vitamins mentioned. This was of little consequence to those members of the population who could obtain articles of food containing the vitamins, but the poor would suffer severely by its use. Whereas brown bread and butter was a most excellent combination, white bread and margarine was a radically bad one. The whole vitamine question was of the greatest importance in regard to the child population. It must not be forgotten that polished rice was used a great deal in this country and in poor households the use of tinned foods was very common, salads were seldom eaten, and in some parts of the country very little fruit was used. Especially among children of the poor we had real evidence that the question of vitamine supply was of actual importance. In England, although we might not have beri-beri or pellagra, and though scurvy might be rare, we had much ill-health which stopped short of definite symptoms, minor departures from the normal which occurred before the establishment of actual disease. The absolute absence of vitamins meant disease, their relative absence malnutrition. It was not sufficiently recognised that the vitamins were not made in the animal body but in the plant, and were accumulated in the tissues of the herbivorous animal. From this it followed that if the diet of the nursing mother was deficient in vitamins then ultimately her milk would become so; there was evidence that the milk of animals could be deficient in vitamins. We probably required something to stimulate growth, and the suggestion had been made that every living cell required factors of the same sort. Research in this subject was necessary, and the backing of the public was needed to stimulate the administrator and the politician.

THE METROPOLITAN WATER-SUPPLY DURING OCTOBER, NOVEMBER, AND DECEMBER, 1918.

ALL three months ending the year 1918 showed a diminished rainfall. Thus the mean fall during the month of October at 12 stations which have been selected as giving equal representation for all parts of the Thames basin was 1.77 inches, being 1.52 inches below the average mean rainfall for that month during the previous 35 years. A chemical examination showed that the Thames raw waters deteriorated in quality, while the raw waters of the Lee and New River generally improved. The filtered waters also showed a falling off in chemical quality, though giving satisfactory results on bacteriological examination. While the raw waters of the Thames and New River contained fewer bacteria than

¹ Vide THE LANCET, Dec. 7th, 1918, p. 767.

their respective averages for the year 1917, the raw water of the Lee contained more bacteria than shown in its respective average for 1917. In November the rainfall was 2.62 inches, being 0.08 of an inch below the average mean rainfall for that month during the previous 35 years. There was a chemical deterioration, again, in regard to the raw river waters and some of the filtered supplies, and there were more bacteria in the raw waters of the Thames and Lee than in 1917, but fewer in the New River water. The filtered waters, however, were regarded as satisfactory. In December the rainfall was 2.80 inches, being 0.19 of an inch below the average mean rainfall for that month during the previous 35 years. Chemical examination of the raw waters again showed deterioration in some respects, while the filtered waters showed improvement, though not up to the standard of 1917. The raw Thames water contained more bacteria than its respective average for the year 1917, while the raw Lee and New River waters contained fewer. The filtered waters were bacteriologically satisfactory. Sir A. C. Houston, the Director of Water Examination, Metropolitan Water Board, again points out that nearly the whole of the supply is now stored antecedently to filtration and the improved condition of the water after storage and before filtration is best expressed by saying that on the average about one-third of the pre-filtration samples contain no typical *B. coli* in 10 c.cm. of water. The importance of storage is obvious.

BORN IN A WELL.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 22nd (p. 324) you report a case of a child born in a well, and remark that the incident is probably unique. In the *British Medical Journal* in 1891 I reported a case of "Childbirth in a Well" in the following terms:—

Early in the morning (1 A.M.) of Sunday, December 21st, when the thermometer was many degrees below freezing point, a woman, aged 39, wife of a bricklayer, while in labour with her eleventh child (only one of whom is now alive), left the house, where she was alone in a room with a couple of young girls, and jumped down a well 20 feet deep, with but 2 feet of water at the bottom. Instead of at once calling the husband, who was in bed upstairs, these girls, who had fallen asleep, and only awoke on hearing the splash, ran off to the house where one of them lived, about a quarter of a mile distant, and roused her mother. A man then came back and awoke the husband, who at once got up and let himself down the well, where he fastened the chain round his wife and (she was drawn up, but, on reaching nearly the top, the chain gave way and let her down again. Some time was then lost in fetching a rope, and she was then drawn out, having been, at the lowest calculation, forty minutes in the well. She was then taken into the house, where she was supported on a chair till about 3 o'clock in her wet clothes, before getting women to come and undress her. After sending her up the husband discovered a child floating in the water. It was not till 10 A.M. (nine hours after she went down the well) that I saw her. I found her on a mattress on the floor, very weak, but wonderfully better than anyone could have expected, and with the placenta, &c., still *in utero*, and this I had some difficulty in removing, having to insert my hand into the womb, when it contracted strongly on my withdrawing it, and with very little hemorrhage. She has since made most satisfactory progress, and, in fact, has not had a bad symptom, not even after-pains, which is most unusual for a woman who has been confined eleven times. She was probably saturated with "liquor" at the time, as the midwife who saw her in the morning found her lying half on and half off the bed, smelling strongly of brandy, and, again, in the afternoon found her sitting with a jug of ale beside her, and in the evening, having lost her, after some search—amongst other places, looking down the well, as it appeared she had said something about jumping down—she was found in a public-house. Her system appears in this way to have been so anaesthetised as to have prevented much shock at the time, and also after-pains. The only marks after a jump of 20 feet, with only 2 feet of water to break her fall, being a small piece of skin off one leg and few scratches on her hands. A post-mortem examination on the child proved it to have never breathed.

I am, Sir, yours faithfully,

Fulbourn, Feb. 23rd, 1919.

F. L. NICHOLLS.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Wednesday, March 5th.

SOCIAL EVENING: at 8.30 P.M.

Dr. A. F. Hurst will discourse on "War Neuroses" (illustrated by cinematograph films and lantern slides).

MEETINGS OF SECTIONS.

Thursday, March 6th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—Chas. W. Buckley, J. Campbell McClure): at 5.30 P.M.

Discussion:

On "The Work of the Spa Physician in Relation to the Proposed Ministry of Health."

Opener: Dr. C. W. Buckley (Buxton).

Friday, March 7th.

LARYNGOLOGY (Hon. Secretaries—Frank A. Rose, Irwin Moore): at 4.45 P.M.

Cases and Specimens will be shown at 3.45 P.M. by:—

Dr. A. L. Macleod, Mr. G. Secombe Hett, Mr. G. W. Dawson, Dr. Douglas Guthrie, and others.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

CHILD-STUDY SOCIETY LONDON, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY, March 6th.—6 P.M.: Lecture:—Miss S. Walker: The Training of Teachers from the Child-Study Standpoint.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Special Eight Weeks' Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

LONDON HOSPITAL MEDICAL COLLEGE.

A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—

MONDAY, March 3rd.—1 P.M.: Lecture III.—Dr. Pantou: Test Meals. Technique for Acidity. Value of Results. Technique for Motor Power. Examination of Faeces.

FRIDAY.—1 P.M.: Lecture IV.—Dr. G. Scott: Radiological Examination of Upper Abdominal Lesions. Value of Opaque Meals.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.

Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—

WEDNESDAY, March 5th.—5.30 P.M.: Lecture V.—Prof. D. N. Paton: Physiology and the Study of Diseases.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.

A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).

WEDNESDAY, March 5th, and FRIDAY.—5 P.M.: Lectures I. and II.—Dr. L. S. Dudgeon: Malarial Fever.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, March 5th.—4 P.M.: Dr. W. J. O'Donovan: The War-Time Experience of Factory Medical Officers and the Position of Factory Medicine under Peace Conditions.

CHADWICK PUBLIC LECTURES, at the Technical College Hall, Bradford.

THURSDAY, March 6th.—7.30 P.M.: Prof. Leggs: Industrial Poisoning and its Prevention.—I. Anthrax and the Wool Industries (illustrated by lantern slides).

Communications, Letters, &c., to the Editor have been received from—

A.—Dr. F. W. Alexander, Lond.: *Annals of Medical History*, New York, Editor of; *American Journal of Care for Cripples*, New York.

B.—Dr. N. Bardswell, M.V.O., Lond.; Mr. J. C. Bhatt, Hyderabad, Lond.; Mr. M. Benaraya, Lond.; Col. W. P. S. Branson, A.M.S.; Dr. A. G. Bateman, Lond.; Dr. M. W. Browly, Manchester.

C.—Messrs. Chamberlin, Donner and Co., Manchester; Miss J. Cowper, Lond.; Dr. R. Cooke, Liverpool; Conjoint Board of Scientific Societies, Lond.; Miss H. Chesshire, Lond.; Messrs. Cassell and Co., Lond.; Dr. F. G. Cawston, Durban; Mr. F. W. G. Clinton, Lond.; Mr. T. Campbell, Wigan; Chadwick Trust, Lond.; Lt. Col. E. M. Cowell, D.S.O., R.A.M.C.

D.—Capt. J. Driberg, R.A.M.C., Lond.; Col. T. A. H. Danes,

Santa Cruz, California; Dr. J. R. Day, Lond.; Dr. C. H. Duncan, New York.

E.—Dr. C. C. Easterbrook, Dumfries.

F.—Miss M. H. Fraser, M.B., Lond.; Col. N. Falcumie, A.M.S.; Dr. J. A. Fairer, Leicester; Factories, Chief Inspector of, Lond.; Dr. C. E. S. Flemming, Bradford-on-Avon; Capt. J. G. Forbes, R.A.M.C.

G.—Dr. W. Gordon, Exeter; Dr. W. J. Grant, Milford; General Medical Council, Lond., Acting Registrar of; Messrs. C. Griffin and Co., Lond.

H.—Humanitarian League, Lond., Sec. of; Prof. W. D. Halliburton, Lond.; Dr. R. A. P. Hill, Watford.

I.—Incorporated Institute of Hygiene, Lond.

J.—Major W. Johnson, R.A.M.C. (S.R.)

K.—Dr. R. Knox, Lond.; Mr. W. Kedge, Ipswich.

L.—Mr. V. W. Low, C.B., Lond.; Mr. E. C. Lowe, Leicester; Local Government Board, Lond., Sec. of.

M.—Medical Research Committee, Lond.; Dr. J. Maherly, Woodstock; Dr. P. R. Manning, Springfield, Mass.; Mr. C. Macmishon, Lond.; Dr. H. A. Macewen, Lond.; Dr. J. P. McGowan, Liverpool.

N.—National Baby Week Council, Lond.; Dr. H. P. Newsholme, Trurobridge; *National Food Journal*, Lond.O.—*Overseas*, Lond., Asst. Editor of.

P.—Mr. W. H. Plows, Lond.; Mr. F. H. Perrycocke, Polperro; Mr. J. A. P. Perera, Sheffield; Panel Committee for the County of London.

R.—Mr. A. T. Roworth, Lond.; Dr. G. M. Robertson, Edinburgh; Royal Society, Lond.; Dr. F. G. Rose, Georgetown, Demerara; Dr. H. Renney, Sunderland;

Capt. J. A. Ryle, R.A.M.C.; Royal Society of Arts, Lond.; Royal Institution, Lond.

S.—Dr. A. G. Shera, Netley; Capt. E. N. Snowden, R.A.M.C.(T.); Prof. E. G. Slesinger, Lond.; Capt. C. F. Strange, R.A.M.C.; Dr. C. Slater, Lond.; Sell's World's Press, Lond., Editor of.

T.—Capt. D. Thomson, R.A.M.C.; Mr. W. S. Tietjen, Lond.; Triplex Safety Glass Co., Lond.; Mr. P. Turner, Lond.; Prof. E. H. Tweedy, Dublin; Mr. C. W. J. Tennant, Lond.

U.—University of London Military Education Committee, Lond., Sec. of.

V.—Mr. R. M. Vick, Lond.; Mr. P. C. Varrier-Jones, Cambridge.

W.—Dr. F. J. Waldo, Lond.; Surg. Lieut. J. G. Wardrop, R.N.; Mr. C. H. Whiteford, Plymouth; Wellcome Chemical Research Laboratories, Lond.; Dr. N. Walker, Edinburgh; Mr. E. Wortley, Roxeth; Mgr. M. E. Carton de Wiart, Lond.

Hunterian Lecture

[IN ABRIDGED FORM]

OR

THE EARLY TREATMENT OF COMPOUND FRACTURES AND OTHER SEVERE INJURIES OF THE UPPER LIMB.

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IN introductory remarks the lecturer said: I shall attempt to deal with general principles rather than with detailed technique. The subject is considered under (1) methods suitable in the early hours of the injury and whose object is the conversion of a compound into a simple fracture by excision and suture, and (2) methods used if sepsis has set in. The treatment of the first of these groups has usually been undertaken at the casualty clearing stations, and that of the second group at the base hospitals, so that in splinting early cases a period of transport has to be considered. In the base hospitals the most suitable splint can be used, regardless of transport. The superiority of the worst natural arm over the best artificial one should make the most conservative surgeon more conservative still.

PRIMARY SUTURE.

The primary excision and suture of wounds, which has been so successful during the last two years, has improved results enormously.

INJURIES WITHOUT FRACTURES.

In injuries without fracture the whole track can usually be excised *en bloc* and the question of immediate or delayed suture will depend upon whether the case can be retained for at least 7 to 10 days, or must be evacuated forthwith. When suture is performed an attempt should be made to restore the functional anatomy of the limb, torn muscles being united or grafted into others of the same group, inter-muscular compartments and tendon sheaths restored where possible, and particular attention given to repair of the deep fascia. Where careful previous examination is possible, it will usually be evident which nerves are out of action, and these should be traced and united wherever the injury permits. Even should the wound pursue a septic course union of divided nerves will prevent retraction, greatly facilitating later reparative operations.

In many injuries by either shell or bullet, entrance and exit wounds are small in comparison with the extensive muscular damage, calling for very careful and extensive excision. Extensive muscular hæmatomata, or even a diffuse infiltration of the whole limb with blood may be found. All such blood-clot should be carefully turned out, and if the actual bleeding point cannot be tied, as, for example, occasionally in the upper forearm, the main vessel should be ligatured above, sufficiently high to control the bleeding. Both artery and vein should be tied, since, as Sir George Makins has pointed out, gangrene is more likely to follow ligature of the artery alone than ligature of both vessels. In such cases closure of the wound should be delayed for at least 48 hours, or until the danger of a sudden acute infection is past, and the limb must be kept thoroughly warm, particularly if immobilised in a Thomas splint. If the wounds are at all extensive the limb should be splinted as carefully as if a fracture were present.

There is the vexed question as to whether any antiseptic substance should or should not be left in the wound after excision. In these early excisions there seems little doubt that an almost similar percentage of successes can be claimed by surgeons using different antiseptics or none at all. Where primary suture is practised, heat, either in the form of fomentations or as electric or hot-air baths, is of value. The process of repair tends to be somewhat sluggish, and sutures should be left in place at least 12 to 14 days, as otherwise troublesome gaping is likely to occur on their removal. Temperatures of 101°, or even 102° or 103° F., are not at all uncommon after successful excisions, and the pulse-rate and the local symptoms of the wound form the only reliable guide to interference.

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WOUNDS COMPLICATED BY FRACTURES.

If these cases can be operated on sufficiently early as great a proportion of success can be hoped for from excision and suture as in wounds of the soft parts alone. The same general principles apply, though it is usually impossible in cases of fracture to excise the whole wound *en bloc*.

In the upper limb a more radical removal of bone fragments is justifiable than in the case of the lower limb. The French surgeons practise a most extensive removal of all loose or even partially loose fragments in their "débridement" operations, while the tendency of English surgery is to leave any fragment which may possibly live *in situ*. In most fractures of the upper limb a middle course is perhaps best, but all completely loose fragments should usually be removed, since not only are the chances of primary union improved thereby, but the formation of an involucrum is avoided, which in the forearm or hand is often very disabling. An exception should be made in the case of fragments bearing a portion of an articular surface, since the disability attending their removal usually justifies the risk of their retention except in certain places to be mentioned later. The cleansing of the ends of the main fragments can generally be satisfactorily performed with a sharp spoon, though if there is no great loss of substance the removal of a thin layer from each end is perhaps safer.

Fracture of the Humerus.

This bone is particularly favourable for treatment on account of the comparative ease with which it can be reached and dealt with and the wide muscular excisions that can be performed, and partly on account of the rapidity with which it throws out callus even after very extensive loss of substance.

In fracture of the shaft, after excision has been performed, the limb has usually been put up in extension in a straight Thomas splint with swivel ring or in the suspension extension splint described later. If the straight splint is used the limb should be kept quiet in this for at least a fortnight, when gradual movement may be begun. In the upper third of the humerus, if excision has proved possible, position during transport has usually been best maintained in a Thomas splint without a swivel ring, and with the arm at right angles to the body.

Fractures of the lower end of the shaft are often very difficult to deal with, and in the later infected stages a good many cases are seen with very considerable disability from malposition. The almost invariable trouble is the forward tilting of the upper end of the lower fragment, which is accentuated by the straight Thomas splint in which they are often put up. Where excision and closure can be performed the most satisfactory result in such cases seems to be obtained by putting them up in extreme flexion, as for a separated epiphysis, and steadying the line of the bone by an acutely flexed internal or external angular splint with a long upper limb.

In all compound fractures of this bone the musculo-spiral group of muscles should be examined before operation if possible, and if apparent paralysis is present the nerve should be examined and repaired if necessary and feasible. Dorsi-flexion of the wrist must be maintained in any after-fixation, and if the nerve is found to be anatomically injured it is sometimes a good plan to maintain such dorsi-flexion during repair by excision of an elliptical portion of skin on the back of the hand followed by linear suture, as described by Sir Robert Jones in the treatment of infantile paralysis affecting the elbow flexors.

Fractures of the Forearm.

Where only one bone of the forearm is fractured free excision of the infected ends can usually be practised, and especial care should be taken to reconstitute as far as possible the contour of the bone to obviate troublesome adhesions of tendons. The middle third of the radius presents special difficulties, and unless the pronator radii teres can be made to act as a splint the attainment of anything like perfect position is often difficult or impossible.

In injuries to the upper end of the radius where the fracture involves the articular surface, as it so frequently does, it is often best to excise the head of the bone at the primary operation. If movement is begun early very good results can be obtained; a more conservative practice is often followed by considerable disability.

With fractures of both bones, particularly if loss of substance is at all extensive, there are often considerable

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difficulties. In the first place, the numerous tendons prevent a satisfactory excision of the soft parts, while, as regards the bones, the maintenance of good position and the prevention of cross union, particularly where the fracture includes the radius in its middle third, is extremely difficult. Care should be taken to reconstitute as far as possible the medial surfaces of the bones, and fragments projecting in this plane should be removed if they cannot be readjusted.

In forearm fractures that have been excised and where speedy transport is necessary a swivel-ring Thomas arm splint has been used with extension obtained by a glove glued to the hand, though where transport is not a necessity better position and earlier movement can be obtained by using the so-called suspension extension splint. Extreme supination must be kept up, and with a Thomas splint a convenient method is by a tennis ball placed in the palm and secured to the bars of the splint in the required position by threads sewn into its outer coat.

A tennis ball, or some form of wooden ball splint is also best used in fractured metacarpal bones, provided the palmar wound, if one exists, has proved capable of being closed.

Fractures of Phalanges.

The transverse and longitudinal arches of the hand—the former bony and ligamentous and the latter bony alone—have received far less attention than their importance deserves; in many cases of inefficient splinting of the hand, either for injuries elsewhere in the limb, or more particularly for fractured metacarpals, the condition of "flat hand" which results is very crippling. In such a hand not only is the opposing power diminished or absent through the loss of tension in the transverse arch, but where the metacarpals have been improperly aligned the absent longitudinal bony arch throws the metacarpo-phalangeal line of joints backwards and puts the interossei at a great disadvantage in their action.

When phalanges are fractured even very extensive damage can be dealt with without amputation by careful surgery of the wound followed by adequate splinting, and fingers that before the lessons of the war had been learnt would have been lost, can be saved by careful conservative methods. It must not be forgotten that perfect resumption of all normal functions is the essential object, and that it is not sufficient to heal the wound or repair the bone unless the movements can be restored. Extension is readily maintained in the early stages by Sinclair's ball splint, with extension by means of a glued glove finger. In cases where this is impossible Sinclair's ingenious suggestion may be followed and traction obtained by boring a hole through the free end of the nail and using the nail for the transmission of the necessary pull.

WOUNDS OF JOINTS.

It is open to argument in many cases of compound fracture whether primary suture following excision is the best treatment, considering the grave results which may follow an imperfect toilet of the wound; but there can be little doubt that where joints are involved the chances of a perfect result which immediate cleansing and closure gives very greatly outweigh the risks. In these cases the temperature chart is often extremely misleading. A rise to 102° or 103° without any great increase in the pulse is common, and can be disregarded if the other signs and symptoms are satisfactory. Where the case is doing well the temperature will usually settle to within normal limits in two, three, or four days.

Shoulder-joint.

Injuries of the shoulder-joint, if uncomplicated by fracture, may usually be dealt with conservatively by washing out the joint and closing the capsule. As to the injection of such substances as ether, formalin, glycerine, &c. into the joint cavity, no very definite evidence exists that they are of any value provided the mechanical cleansing of the joint has been complete.

Where a fracture of the head of the humerus coexists with the joint injury sepsis is so liable to lurk behind in the cancellous tissue of the bone, and future painful adhesions are so likely to follow such an injury of the large articular surface of the head, that more radical treatment is often advisable. In practically all other joints in both the upper and the lower limb—except the radio-humeral joint—opinion has been gradually hardening against the performance of excision as a primary operation. In the case of the shoulder-joint the results of excision, on the whole, are extremely

good. Where excision is performed a straight Thomas's splint without a swivel-ring, and with the arm abducted at right angles to the body, is probably the best for transport, while where the patient can be retained the system of slings mentioned later is satisfactory and allows of early movement.

Elbow-joint.

Open injuries to this joint are not common without concomitant fractures of the bones entering into its formation; but where they do occur they should be treated by thorough cleansing of the joint followed by suture. It is often not possible to reach the joint cavity satisfactorily through the original traumatic opening, and if such is the case the original track having been excised, the joint may be opened by a longitudinal excision over the head of the radius with the forearm prone, through which satisfactory lavage can be carried out. This method exposes the radio-ulnar joint, or can do, and damage to this important joint can be inspected and dealt with. Unless the injury has destroyed the greater part of the articular surfaces of the elbow-joint, it would seem best to limit interference as far as possible.

A set excision at this stage has practically nothing to recommend it. Every possible use should be made of the tendinous expansion of the triceps to reconstitute a shattered olecranon, and the continuity or otherwise of the ulnar nerve must be verified and dealt with. Where the injury to the articular surfaces renders it useless to hope for a movable joint, great care must be taken in putting up these cases. The forearm should always be supinated, and the angle at which the elbow is kept must depend largely on the patient's usual occupation. It is quite remarkable, however, how grave an injury is compatible with a subsequently movable joint, provided infection does not occur and the injury allows of early active movement vigorously maintained. In some cases where the olecranon is already separated and considerable articular damage exists it is possible to separate the injured surfaces with a flap of fat and fascia, and so secure a movable joint by means of a modified arthroplasty, particularly with injuries in the region of the capitellum. It would seem best where the head of the radius is badly damaged to excise it completely, and in all these cases the limb should be invariably kept in full supination and movements of pronation and supination began as early as possible.

Wrist-joint.

Wounds of this joint are usually accompanied by injury to the carpal bones, and the complexity of the synovial cavities renders thorough cleansing extremely difficult. Where the carpal injury is not too severe conservative surgery is sometimes possible, and the intercommunications of the synovial spaces are very readily shut off under the influence of injury or infection, so that if early vent is given to any remaining sepsis it is usually fairly easy to keep the process under control. Limited excisions of the carpal bones in response to the nature of the damage present give usually quite good results, provided attention is given to the position of the wrist afterwards. Dorsi-flexion must be maintained and ulnar deviation prevented; early and vigorous finger movement must be insisted on.

Where a thorough excision is not possible, and particularly when many of the tendons are divided, it is usually wiser not to aim at primary closure of the wound. In such cases a careful anatomical reconstruction of the divided structures, and as complete as possible a removal of dead tissue, followed by the application of such a tissue solvent as Dakin's fluid, will usually allow of early secondary closure. If such a case has to be left open, every effort should be made to avoid leaving a tendon or tendons running uncovered through the wound, as these will certainly die. When they cannot be incorporated in the walls of the wound, it is usually better to realise at once their inevitable death and to make as good a provision as is possible for the resumption of the function they subtend by such grafting or cross-unions as are necessary.

Metacarpo-phalangeal and Phalangeal Joints.

Injuries to these joints should be treated as conservatively as possible, and every attempt should be made to secure primary union; secondary sterilisation is a long and tedious process. Sinclair's ball splint is perhaps the best in the after-treatment of these cases, and the good splinting attachment permits of graduated and increasing movements.

Perhaps the most difficult problem for the surgeon in the early treatment of all these severe injuries is the decision as to when excision and suture should *not* be performed. He must be guided partly by the length of time since the infliction of the injury, partly by the anatomical possibilities of the wound, and partly by the nature of the infection present, if known. Gas-bacillus infection is not greatly to be feared where the main vessels are intact, since a wide excision of all dead or damaged tissues will prevent its development. Further, its presence is readily recognised by the indications present in the wound and by the character of the pulse and the temperament of the patient. The most dangerous infection possible in these cases is that caused by the hæmolytic streptococcus. Even with the most radical surgery the chances of success are extremely slender.

THE TREATMENT OF INFECTED WOUNDS.

Having now briefly reviewed some of the principles which underlie the early treatment of these severe injuries to the upper limb, it remains to consider the methods to be adopted when the case is seen too late for primary excision and suture or when this method has been tried but infection has developed. This second line of treatment represents mainly the work as performed in the base hospitals in France. Consequently, where we attempt to apply the lessons of the war to civil surgery it will usually be advisable to adopt, in conjunction with "first line" surgery, the splinting of the "second line."

Two sides of the subject have to be considered—namely, (1) the treatment of the wound itself; (2) the treatment of the part wounded; but each is the necessary corollary of the other. It is chiefly in the field of pure wound treatment during this infected stage that the great controversy of opinion and practice has been waged during the war.

There can be little doubt that the treatment most likely to provide practical success is that which most closely imitates Nature's own treatment or which exaggerates it to meet the aggravated conditions present, and it is in the interpretation of these processes that the experimental work of Sir Almroth Wright and his co-workers has been so valuable. Approximately, it may be said that when dealing with an infected wound the natural reaction of the body is to limit as rapidly as possible the depredations of the invading organisms by destroying the food on which they live, and at the same time to guard against their further invasion by setting up a strong zone of defence around the wound. The first purpose is accomplished by the liberation in the wound, from dead pus cells, of trypsin, which splits up the protein of the dead tissues and deprives the organisms of their necessary pabulum, since most organisms need, at any rate, polypeptides for their growth. The second is secured by the speedy construction of a band of leucocytic infiltration and, as a guard against the activity of the body's own agents, by an increase in the normal antitryptic activity of the serum.

It is thus seen that both in the pre-infected and in the infected stage of a wound the same general principles underlie its treatment—namely, the thorough removal of all dead or dying tissues—and that the sole difference consists in the fact that before bacterial spread has occurred the process can be carried out quickly by means of the knife, while at a later stage where the line between living and dying tissues is no longer distinct, the slower process of hydrolysis must be resorted to.

We have here, then, a natural line of wound treatment along which success is to be expected. In the neutral hypochlorite solution of Dakin and Daufresne we have a substance of very great proteolytic value. Experiments on the action of a 0.5 per cent. hypochlorite solution on coagulated albumin, gelatin, albumin in solution, and dead tissue showed that the solids were dissolved and the dissolved protein hydrolysed, the various stages of the formation of alkali, albumin, proteoses, peptones, and lower products being readily followed. The rapidity of the action is well seen by two experiments.

In the first, if a solution containing 5 per cent. egg-white and 0.5 per cent. hypochlorite is incubated for eight hours at body temperature, no protein, proteose, or peptones can be detected although all these substances are readily demonstrated during the course of the experiment.

In the second an artificial wound was constructed by placing a weighed piece of meat on a tray in a Petri dish under sterile conditions, the whole being kept moist and at

body temperature. In one case two-hourly irrigation with two ounces of Dakin's solution was carried out and in another a similar procedure with normal saline. In each case a piece of meat weighing 1½ oz. was used, and the one irrigated with Dakin's solution was completely dissolved in 72 hours, while the one where saline was used was practically unaffected.

This all-important action of the hypochlorite solution is, of course, a purely chemical bulk action, and the amount to be used must be proportionate to the tissue to be dissolved, a fact which accounts for the apparent failure of Dakin's solution in Sir Almroth Wright's "artificial slough" experiment.

It would seem probable that along this line, the hydrolysis of dead tissues and the consequent secondary sterilisation of the wound, lies the most probable avenue for advance in the treatment of all infections. A great deal of work remains to be done, and whether further research shows ferment action or some form of chemical or bacterial hydrolysis to be the most successful, sufficient is already evident to establish the principle that the speediest way of dealing with an infection is to remove those substances in the medium which are essential for bacterial growth.

In the treatment of infected wounds, therefore, as regards the wound itself, Nature's tryptic digestion has been replaced by hypochlorite hydrolysis, the hypochlorite being introduced into the wound in the form of intermittent irrigation with Carrel's tubes. Dakin's fluid so employed is used *solely* for its hydrolytic power, and it is a coincidence, and perhaps an unfortunate one, that in a test-tube this fluid possessed a high so-called "bactericidal power."

The fact that a few seconds after its introduction into an actual septic wound suffices to destroy the hypochlorite as such, and the additional fact that organisms can be found growing on any isolated portions of dead tissue remaining in a wound which has been bathed in the solution, should be sufficient to vindicate it from any charge of antiseptic action *in vivo*, and prove, if proof is required, that its hydrolytic power is responsible for its undoubted success.

Nature's second method of dealing with an infected wound—namely, the establishment of a zone of leucocytic defence round the wound—is best aided by the maintenance of absolute rest and as perfect an alignment of parts as is possible, and further by a minimum of operative interference on the part of the surgeon while infection is active.

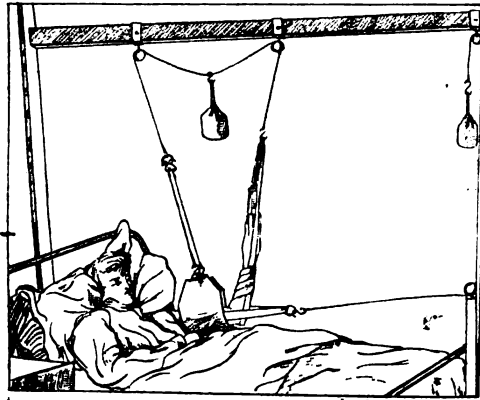
TREATMENT OF THE PART WOUNDED.

When splinting an injury of the upper limb at this stage, the question of transport need no longer limit the choice. The counterbalanced suspension method was used, and the fracture wards were fitted with permanent superstructure carrying adjustable cross-bars from which any splint can be suspended in counterbalance by means of cord, pulleys, and sand-bags. If the arm is extended by a running weight no movements of the patient can disturb the relative as opposed to the absolute position of the limb in its splint.

In deciding on the position of the limb two factors must be borne in mind: (1) the fractured bones must be brought into and maintained in as perfect a position as possible, and (2) the musculature of the limb must be held in the position which will best favour resumption of functional activity. Now the mechanics of the upper limb are rather altered by the fact that the human body is usually active in an upright position. With the body erect certain groups of muscles have, in addition to the act they are helping to perform, to overcome the weight due to gravity. There seems little doubt that this gravity effect is largely responsible for the so-called preponderance of certain groups of muscles, and its results are well seen in cases of infantile paralysis, where recovery is much more common in the gravity-aided muscles. Consequently, when putting the upper limb into its optimum repair position the gravity opposing muscles should be as far as possible kept shortened. The best position and a convenient one for wound treatment is as follows. The shoulder is abducted and flexed at right angles to the body, the arm is externally rotated, the forearm is flexed at right angles, and is kept in extreme supination, while the wrist-joint is extended and the fingers are held abducted and extended. This position has been used in most fractures of the humerus and bones of the forearm, except where unfavourable to correct bony alignment.

The Suspension Extension Splint.

The method employed is applied as follows. For example, in fracture of the shaft of the humerus Sinclair's glue is applied to the front and back of the forearm and gauze strips are fixed to it; a glove is glued to the hand, leaving thumb and fingers free. Further, gauze strips are glued to as great a surface of skin over the lower fragment as possible. A mackintosh sling is applied over the dressings round the fracture and is suspended by a cord which, running over two pulleys, has its other end attached to a hook. To this hook are fixed the



Suspension extension splint for treatment of upper-limb injuries in the optimum position for repair.

gauze strips from the forearm, also the strings from each glove finger, permitting suspension by either or both. The counterbalancing weight is fixed to the cord between the pulleys, and the gauze from over the lower fragment is fixed to a cord running over a pulley at the end of the bed, to which extension weight is attached. Supination is obtained by a torsion sling applied round the hand and running to the top or bottom of the bed.

In upper-arm wounds where the extent of skin involved proves too great for this method we have used an arm Thomas's splint, bent to a right angle, and with the angles of attachment of the ring altered to fit over point of shoulder. Extension is obtained by using the forearm as a lever. Gauze glued to the lower third of the forearm and fixed to the internal bar forms the fulcrum; gauze glued to upper third of forearm and pulled to the external bar forms the force, and so exerts traction in the line of the humerus. The optimum repair position is maintained, except for the absence of external rotation at the shoulder-joint.

Fractures of the forearm have usually been treated by the suspension extension method described for the humerus, with a sling from the seat of fracture to top of bed, which counteracts any tendency of the fracture to sag. Very extensive or very septic wounds have been treated for a time on a form of suspension extension tray, consisting of a metal tray with a drainage-pipe. A wooden upright, against which the upper arm rests, serves as a counter-extension. The wooden attachment runs forward under the tray and has at its end a pulley over which runs a cord, taking extension from lower forearm or fingers, according to situation of wound. In fractures of both bones a wooden side-piece with straps is added, so that the forearm can be treated in supination. The whole apparatus is counterbalanced in suspension. The drainage-tube is connected to a bottle at the side of the bed, avoiding any wetting.

In wounds of the carpus and lower third of the forearm this splint has also been used, usually with a wedge attachment to secure adequate dorsi-flexion of the wrist. Extension is obtained by glove fingers glued to the skin and run by a kind of wood gearing to one central pull, thus maintaining good position of the fingers and an equal distribution of strain.

INFECTED WOUNDS OF JOINTS.

In dealing with infected wounds of joints, whether or not complicated by fractures, a movable joint has been aimed at, and it is surprising in what severe injuries a certain amount of movement can be obtained. In the shoulder-joint, as mentioned before, excision is probably best if the head of the humerus is gravely injured, and if this operation is

performed, the arm is put up abducted and flexed. In general, in infected joints in the upper limb, once drainage has been established and hypochlorite introduced the condition seems improved by movement. As a rule the limb has been so arranged that if ankylosis should occur, it should occur in the most desirable position, while movement round this optimum position as a mean has been encouraged.

In the *shoulder-joint* the arm and forearm have been suspended in mackintosh slings, counterbalanced by weights and pulleys, and if the balance is accurate, the patient is able to move his arm with the minimum of muscular effort.

In the *elbow-joint*, where arthrotomy has had to be performed, the vertical incision over the head of the radius has been used, which by a downward and inward extension will also serve to expose the radio-ulnar joint. These cases have been treated on a modification of the suspension extension tray, the tray being so slung that its position of rest is that in which ankylosis, if it should follow, is desired to occur. If this splint is carefully counterbalanced, or if the patient assists himself with his other hand, all the movements of the elbow can be carried out, without in any way interfering with the treatment of the wound.

In regard to the *wrist-joint*, cases of infection of this joint have been treated in dorsi-flexion and have been kept strictly immobilised, since the advantages of early movement do not compensate for the risks of spread of infection along tendon sheaths and communicating synovial spaces. In the *meta-carpo-phalangeal* regions the same methods have been used as described in the early first line treatment.

SURGICAL TREATMENT.

As to the surgical treatment of these infected wounds the essential condition is that all pockets and portions of the wound must be made freely accessible to the irrigating fluid. The scissors should be freely used to remove any exposed tendinous expansion or intersections, as tendon tissue is very slowly hydrolysed and is very apt to keep up a slow and prolonged suppuration. In the early stages of acute sepsis the least possible manipulation of the limb in search of hidden or pocketed pus would seem best, as in the majority of cases, where immobilisation is good, a barrier will be created against any general spread of infection, and pus, if it is formed, will be local in site, and readily dealt with when the moment arrives.

Some form of bacteriological control should be instituted in these cases, and when what has been termed surgical sterility is reached, secondary suture may be carried out, with a large percentage of successful unions. All through the treatment of these cases attention to the wound must be paralleled by care that the restoration of function is encouraged by every possible means, and of such means early active movements are the most important. Fortunately there is a satisfactory guide to the extent to which movement can be carried out, in the pain which follows any excessive motion. If the limb has been arranged so that movement does not disturb its correct alignment, active movement can be safely encouraged in all cases within the limits to which pain forms a safe and certain guide.

I would like to express my great indebtedness to my colleagues Captain F. D. Saner and Captain O. G. Morgan for the readiness with which they have allowed me to use work which was jointly carried out.

Guy's Hospital.

THE War Emergency Fund has recently received donations of 50 guineas each from the Royal College of Physicians, London, and the Royal College of Surgeons, England.

THE LATE MR. G. B. McCauley, L.R.C.P. & S. EDIN.—The death is announced on Feb. 12th of Mr. G. B. McCauley, who for a considerable time was senior medical practitioner and senior justice of the city of Londonderry. He was in his eightieth year. A native of Newry, co. Down, Mr. McCauley went early in life to Londonderry. In 1869 he became L.R.C.P. & S. Edin., and settled down in practice in his adopted city, where he rapidly became one of the leading medical practitioners. He also took a prominent part in the civic life of Londonderry, entering the corporation in 1894, and he was specially interested in guiding the public health. He was most popular in every way and much esteemed as a medical doctor. One of his sons, Captain G. B. McCauley, M.D., R.A.M.C., has been awarded recently the Military Cross.

THE HYSTERICAL ELEMENT IN ORGANIC DISEASE AND INJURY OF THE CENTRAL NERVOUS SYSTEM.

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It has long been recognised that hysterical symptoms may be grafted upon symptoms caused by organic disease. Our experience with soldiers during the past four years has led us to believe that this association is much more common than has generally been supposed. We would even go so far as to say that there are few symptoms caused by organic disease which are not liable to be aggravated and perpetuated by suggestion, so that it becomes necessary in almost every case of impaired function to look for an hysterical element which can be removed by psychotherapy.

We have often found that hysteria may account for a large proportion of the incapacity in a patient presenting such definite signs of organic disease that it might very easily have been presumed that the entire condition was organic. We are consequently now in the habit of testing every case, in which it is at all conceivable that an hysterical element is present, by the only means which can yield the necessary information—namely, by observing the effect of psychotherapy. No other means are available, as, on the one hand, organic physical signs do not exclude the possibility of hysterical symptoms being present and, on the other hand, our observations, as well as those of other investigators, have proved that the supposed stigmata of hysteria are not present until they have developed as a result of the unconscious suggestion of the observer, who may produce them in suggestible individuals suffering from organic disease just as easily as in those suffering from hysterical disorders.¹

Disseminated Sclerosis.

It is not an uncommon occurrence to find an extensor plantar reflex, ankle clonus, exaggerated knee-jerk, and absent abdominal reflex in a patient who seeks advice for some early symptom of disseminated sclerosis, such as impaired vision or unsteadiness of the hands, in spite of the fact that no symptom of paraplegia is yet present. These physical signs are accepted as absolute proof that the disease has involved the pyramidal tracts, and experience shows that sooner or later the legs will become weak and that severe spastic paraplegia will ultimately develop. The conclusion to be drawn from these facts is that signs of organic disease of the pyramidal tract may precede the onset of symptoms.

Many patients, especially women, suffering from disseminated sclerosis have a peculiar state of mind, often erroneously called hysterical, one feature of which is an abnormal degree of suggestibility. It is not surprising, therefore, that hysterical symptoms—symptoms produced by suggestion and curable by psychotherapy—may develop. When the lesion to the pyramidal tracts in such a suggestible individual becomes sufficiently marked to cause some stiffness and weakness in the legs, the stiffness and weakness may give rise to the idea of paralysis, and hysterical paraplegia may rapidly appear. If the patient is seen at this stage it may be impossible to make an accurate diagnosis, for we are face to face with a case of hysterical paraplegia with all the physical signs of organic paraplegia, although only a very small proportion of the incapacity is a result of the organic lesion.

Such a patient may be given a rest cure, inunctions of mercury, injections of salvarsan, or one of the numerous other drugs which have from time to time been advocated for disseminated sclerosis by individual physicians, only to be rejected by others, who have employed them with less faith and therefore with less effect. The treatment, whatever its precise nature, is really a form of psychotherapy, and the hysterical paraplegia disappears, leaving behind the physical signs of organic paraplegia and the slight degree of weakness and stiffness, which were present before the onset of the hysterical symptoms.

This we believe to be the chief explanation of the occurrence of periods of more or less spontaneous improvement, which is such a characteristic feature of disseminated sclerosis. It applies equally to the improvement of other symptoms, such as amaurosis; the slight impairment of vision, which results from the earliest changes in the optic nerves, sometimes even before any change can be recognised in the discs, suggests a grave loss of vision to suggestible individuals, so that almost complete blindness may occur long before definite optic atrophy is present. The vision may greatly improve again either spontaneously or as the apparent result of some form of treatment, but really as a result of suggestion.

It is very common in disseminated sclerosis to obtain a history of temporary weakness of the legs or temporary blindness some months or even years before the true nature of the disease is finally recognised. The temporary symptoms have generally been regarded as hysterical, but the physician who sees the patient now for the first time is inclined to say that the old diagnosis was both incorrect and unjust, as the symptoms must really have been organic in origin and a part of the disease from which the patient is obviously suffering at the present time. The truth is that the early symptoms were probably to a great extent hysterical, having been suggested by the very slight incapacity caused by the organic disease. The hysterical element disappeared, leaving the slight organic element behind. The early diagnosis of hysteria, though only partially correct and in one sense unjust, was distinctly to the patient's advantage if it led the physician to employ psychotherapy, which would cause the rapid disappearance of the hysterical symptoms.

No satisfactory explanation has ever been offered which would adequately explain the remittent character of the symptoms of disseminated sclerosis if they were entirely organic in origin. It is quite possible that a period of rapid deterioration corresponds with the rapid development of new areas of disease in the central nervous system, and that such a period may be followed by another of much slower development of the disease, during which changes may occur in the rapidly formed areas of disease, which result in their contraction, so that nervous tissue which was originally thrown out of action by compression recovers its functions. This probably explains the temporary paresis of one or more of the external muscles of the eye, and some of the slighter variations in the degree of paralysis of the limbs and of the impairment of vision, but it is hardly conceivable that sufficient change should occur in the central nervous system to account for the conversion of complete paraplegia into very slight stiffness and weakness of the legs, or of total blindness into slightly indistinct vision. Our explanation also makes it easy to understand why spontaneous improvement occurs more often in females than in males, and in the neurotic than in less suggestible individuals.

These ideas are represented diagrammatically in Diagram I. The line A G' represents the gradual development of paraplegia in a case of disseminated sclerosis. When the time

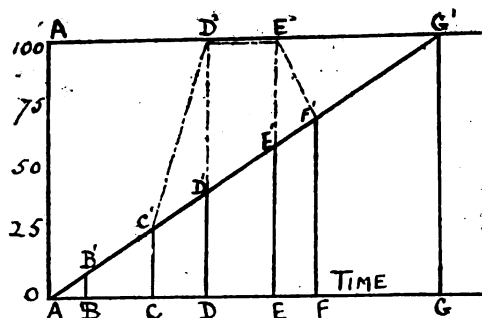


DIAGRAM I.—Combined organic and hysterical incapacity in disseminated sclerosis. The vertical represents the degree of incapacity, the total height being 100 per cent. The horizontal represents time.

B is reached the degree of incapacity, B B', is still so slight that it remains unnoticed, but it is sufficient to produce physical signs. When the time O is reached a certain amount of stiffness and weakness is noticed, this being represented as O C'. This may continue to develop with the advancing disease until, at the point D, the incapacity is

DD¹. It is possible, however, that the slight impairment of function represented by CC¹ may suggest a further degree of incapacity, with the result that the patient becomes completely paraplegic. The total incapacity, DD², is then made up of an organic element, DD¹, together with a hysterical element, D¹DD². This condition of mixed organic and hysterical paraplegia may last until the point of time E, when, as a result of some counter-suggestion, the patient begins to improve and the hysterical symptoms eventually disappear, leaving him with the incapacity FF¹, which is somewhat greater than at the onset of the hysterical symptoms (CC¹), but very much less than the total incapacity. If the hysterical nature of the symptoms was at once recognised, the total incapacity DD² could have been reduced at a single sitting to DD¹.

Tabes.

We have shown how disease of the lateral columns produces physical signs before any symptoms have developed, and how the earliest symptoms may be exaggerated as a result of the development of hysterical paralysis on the top of the organic incapacity. Exactly analogous phenomena may occur in disease of the posterior columns. It is very common to find lost ankle-jerks with feeble or lost knee-jerks and some impairment in the vibration-sense over the bones of the legs in patients who have sought advice on account of gastric or other crises, impaired vision, impotence, or disturbances in micturition, which are due to early tabes, but who have so far had no ataxy or other symptom which would indicate that the posterior columns are diseased. It is clear, therefore, that the physical signs of disease of the posterior columns, as well as of the lateral columns, precede the onset of symptoms.

Physical signs of organic disease of the central nervous system are thus qualitative and not quantitative.

We have seen numerous cases, in which much of the incapacity in a man obviously suffering from tabes was proved to be hysterical by its rapid disappearance with psychotherapy, the symptoms having been suggested to the patient by the slight incapacity which resulted from the actual organic disease. In addition to this auto-suggestion hetero-suggestion often plays a part, symptoms being unconsciously suggested by the medical officer in the course of his examination. It is, for example, very easy to suggest Romberg's sign, and we have now seen a number of cases in which a well-marked Romberg's sign was obviously hysterical. In some cases it was the only hysterical symptom present; in others, like the following reported by Lieutenant S. H. Wilkinson,³ it was accompanied by hysterical paralysis, which had resulted from auto-suggestion.

Hysterical paraplegia and hysterical Romberg's sign in a man with tabes.—Driver B., aged 22, was blown up by a shell at Salonika on Jan. 19th, 1917. On regaining consciousness he found he was unable to walk. In spite of treatment with electricity, hypnosis, and massage at Malta he remained paraplegic. When admitted to Netley on Jan. 8th, 1918, the paraplegia was found to be hysterical, and he quickly learnt to walk normally. By Feb. 13th he was feeling well in every way and would have been sent to duty had it not been for the condition of his pupils. The right pupil was larger than the left; it was oval in outline and reacted neither to light nor accommodation. The outline of the left pupil was also slightly irregular and gave a typical Argyll Robertson reaction. The knee-jerks and ankle-jerks were normal.

His medical officer, thinking that he might have tabes, asked him whether he had ever felt dizzy or likely to fall when closing his eyes. He answered in the affirmative, and on being tested for Romberg's sign gave a well-marked reaction, which became more marked at subsequent examinations. This was subsequently recognised as being anomalous, for the knee-jerks and ankle-jerks were normal, showing that there could not be any great loss of muscle-sense in the legs. It was concluded, therefore, that the Romberg's sign had been unintentionally produced in the course of examination. This view was confirmed when every trace of the sign disappeared two days later as a result of counter-suggestion.

The Wassermann reaction of the blood and cerebro-spinal fluid was strongly positive, so that there can be little doubt that the pupil changes were due to early tabes, although the tendon reflexes were normal.

The improvement in the gait of tabetic patients which results from the methods devised by Frenkel does not, in our opinion, always act solely by educating the patient to use his eyes to help his deficient muscle-sense, and to make the most of such muscle-sense as he still has. The results obtained are sometimes too rapid and too dramatic, and can scarcely be explained except as a result of suggestion, the incoördination being largely hysterical and the nature of the incapacity having been suggested by the slight degree of unsteadiness actually caused by the organic disease.

One of us (A. F. H.) in 1913 saw a man with all the physical signs of tabes who had been unable to walk for six years. He was brought in a chair to the Guy's Neurological Department at 9.30 A.M. After he had been examined he was told that he would probably learn to walk again if he carried out certain exercises which were shown to him. He continued to practise these, and by 12 o'clock he had improved to such an extent that he could walk the length of the room, and in a week he was walking about normally.

This was regarded at the time as a triumph of re-education of the deficient muscle-sense, but the re-education must really have been re-education of the patient's mind—in other words, psychotherapy; as, if the total inability to walk had been due entirely to organic changes in the cord, it is inconceivable that the little muscle-sense still present could have been re-educated to such an extent in a single morning after lying dormant for six years.

Friedreich's Ataxy.

We have not had the opportunity of investigating many cases of organic nervous disease during the war, as, except for those caused by syphilis, they are rare among soldiers. The following case under the care of Captain W. R. Reynell was a typical example of Friedreich's ataxy, and until recently we would have accepted all the symptoms as the result of the organic changes in the central nervous system without further discussion. We would have said that Friedreich's ataxy is one of those nervous diseases in which very little can be done, and that the patient could hope for no improvement, but would slowly and steadily get worse. We have no doubt that this opinion would have been shared by the vast majority of physicians.

So convinced have we become of the enormous importance of looking for an hysterical element, even in the most unlikely places, that Captain Reynell proceeded to treat the patient as if his incapacity was hysterical, although there was nothing in his mental or physical condition which gave any grounds for such an idea. The treatment was fully justified by the result, and instead of sending the patient home as a helpless cripple, he has now been discharged from the Army in a condition which will not prevent him from earning a living in some light occupation for a time, although, of course, the ultimate prognosis remains as hopeless as ever.

Hysterical ataxic paraplegia associated with Friedreich's ataxy.—Pte. B. two years ago gradually became unable to walk in the dark, but it was not until he was sent to France with a Labour Battalion in October, 1917, six months after joining the Army, that he had any difficulty in the daylight. He was stooped several times by the military police on suspicion of being drunk, as his gait was unsteady. After an attack of influenza in June, 1918, the ataxy was much exaggerated, and from this date he only went out in a bath-chair. The difficulty in walking then steadily increased up to the time of his admission to Seale Hayne Hospital on Oct. 12th, 1918.

Dr. W. R. Haupt informs us that the patient's father was a very heavy drinker and had infected his mother with syphilis, which had led to the perforation of her palate. His brother is a complete cripple and never leaves his home. Eight years ago his hands became unsteady and he had to give up his work. Dr. Haupt reports that he has kyphosis and lateral curvature of the spine, pes cavus, absent knee-jerks, extensor plantar reflexes, marked Romberg's sign, nystagmus, a peculiar hesitating, almost stuttering speech, and intention tremor. He is very emotional and laughs and cries at the least provocation. He is also very deaf. Dr. Haupt regards him as a typical case of Friedreich's ataxy.

Our patient's speech is slightly affected, and there are sudden changes of pitch, as in a voice that is breaking. On admission he could scarcely do anything owing to extreme incoördination, and he fell frequently when he tried to walk without assistance. He was very unsteady on standing, and he fell immediately he closed his eyes. There was a slight but definite kyphosis, and the plantar arches were abnormally high on both sides. The knee- and ankle-jerks are completely absent on both sides. The plantar reflexes are difficult to obtain, but appear to be extensor. When asked to pour water from a jug into a tumbler definite incoördination in the arm movements was well seen and much water was spilt. The Wassermann reaction was negative in the blood and cerebro-spinal fluid. A diagnosis of Friedreich's ataxy was made.

Treatment by persuasion and re-education was given, as it was suspected that the ataxic gait might be partly functional. He learnt to walk fairly well on the first day of treatment, and further improvement followed exercises practised for half an hour three times a day. A week after treatment was begun the gait was almost normal, and unsteadiness could only be detected when the patient changed his direction suddenly. The hands soon became so steady that he developed into a competent potter.

Injuries and Acute Diseases of Brain and Spinal Cord.

Just as the physical signs of an organic lesion of the pyramidal tract may precede the development of paralysis due to the lesion, and may be associated with hysterical paralysis, persisting after the cure of the latter by psychotherapy, so may these physical signs persist after recovery from organic paralysis and be associated with hysterical paralysis, which develops as the organic symptoms disappear.

Injuries and acute diseases of the brain and spinal cord may result in changes which are to a great extent evanescent. The vaso-motor disturbances and microscopical changes in the nerve cells, such as chromatolysis and eccentricity of the nuclei, disappear entirely; inflammatory exudation and oedema also disappear entirely or leave only a trivial amount of permanent damage, and even hæmorrhages are absorbed to a great extent, the initial changes being thus very much greater than the permanent results of the lesion. The initial changes may, however, be sufficient to block the transmission of nerve impulses and consequently to cause complete loss of function in the parts which receive their innervation from the affected portion of the nervous system. But the permanent results of the lesion may be so slight that no loss of function persists, although, corresponding with the converse conditions in disseminated sclerosis, the damage may be sufficient to give rise to the permanent presence of organic physical signs. This is seen, for example, in the hemiplegia and paraplegia following syphilitic endarteritis, which have been treated early and thoroughly, and in the spontaneous recovery in some cases of poliomyelitis.

In the majority of cases the gradual improvement in the actual lesion is accompanied by a corresponding functional improvement. Occasionally, however, especially among suggestible individuals, such as soldiers who are mentally and physically exhausted as a result of the stress and strain of active service, the patient may not realise that the lost functions are returning. The initial incapacity gives rise to the idea of permanent incapacity by auto-suggestion, often aided by the unconscious hetero-suggestion of the physician, and whilst a less suggestible man might recover the use of his paralysed limbs in a few days, the paralysis is perpetuated in the suggestible man by the development of an hysterical element, which has been produced by suggestion and which can be removed by psychotherapy. In such a case the paralysis remains complete, and although at first it is entirely organic in origin, the proportion of the organic to the hysterical element in its make-up becomes steadily less, and in some cases a stage is reached in which the incapacity is almost entirely hysterical and independent of structural change, although the latter may still be sufficient to give rise to physical signs. *A condition may thus occur which is primarily organic, but is ultimately hysterical. Everything of organic origin may disappear, or the residual lesion may be sufficient to produce organic physical signs without any loss of function, or both organic physical signs and some loss of function.*

These ideas can be represented diagrammatically in the same way as in the case of disseminated sclerosis. The total incapacity resulting from the original wound or disease steadily improves, and when the time C is reached recovery may be complete (Diagram 2) or partial (Diagrams 3 and 4).

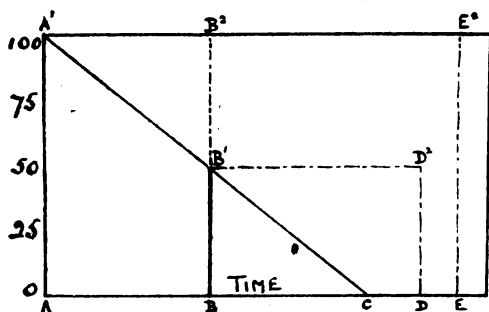


DIAGRAM 2.—Hysterical paralysis associated with organic paralysis, with complete recovery. In this and following diagrams A—A' represents the total incapacity resulting from the original wound or disease.

The partial recovery may leave no obvious physical incapacity, but it may, as in Diagram 3, leave sufficient residue to result in definite physical signs of organic disease, represented by OO^1 . In severer cases there may be some permanent incapacity, as represented by OO^1 in Diagram 4.

In each case the steady improvement of the organic condition may be masked by a simultaneous development of hysterical symptoms, so that at the moment B the incapacity may be partly organic (BB^1) and partly hysterical (B^1B^2). If psychotherapy is employed at this moment the improvement represented by B^1B^2 takes place, the organic residue

BB^1 remaining. If re-education is now constantly employed steady improvement will occur. During the period BC the symptoms and finally the physical signs disappear (Diagram 2), the symptoms disappear but physical signs persist (Diagram 3),

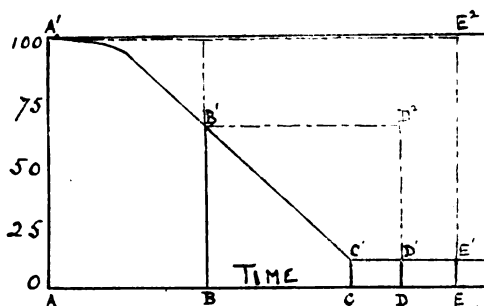


DIAGRAM 3.—Hysterical paralysis associated with organic paralysis, which recovers but leaves organic physical signs.

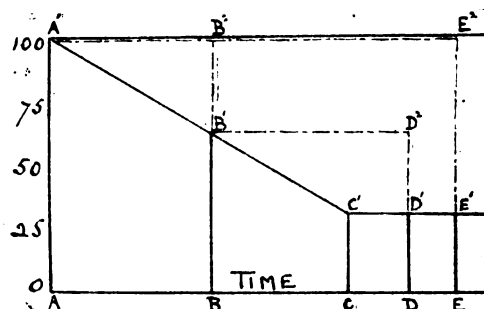


DIAGRAM 4.—Hysterical paralysis associated with organic paralysis which recovers incompletely.

or some symptoms as well as the physical signs persist (Diagram 4).

If, however, no re-education is given the symptoms may again be perpetuated by the development of an hysterical element. In that case at the period represented by D, when no further improvement can take place, the incapacity DD^2 in Diagram 2 and D^1D^2 in Diagrams 3 and 4 is hysterical and can be rapidly removed by psychotherapy. If the partly hysterical nature of the condition is not recognised at all until later, when no further improvement in the organic residue is possible, as, for example, at the moment marked E, psychotherapy will result in complete recovery (Diagram 2), almost complete recovery although the physical signs will still be present (EE^1 , Diagram 3), or incomplete recovery (EE^1 , Diagram 4).

Diagnosis.

The numerous symptoms and physical signs which are supposed to help in the diagnosis between organic and hysterical paralysis fall into three groups. The first group consists of the phenomena which afford visible and conclusive evidence of structural changes in the nervous system, such as optic atrophy and neuritis, and abnormal cells in the cerebro-spinal fluid. Equally conclusive are the second group of physical signs—those which are entirely beyond voluntary control, such as the Argyll Robertson pupil, the reaction of degeneration, and loss of knee- and ankle-jerks. The third group of signs are those which could be imitated more or less accurately by anyone who had studied them, but which would not be likely to occur as a result of auto-suggestion or be simulated by an ordinary malingerer, as the individual would be unaware that such signs accompanied the disease he believed or pretended that he had.

The signs belonging to the last group lose much of their value in distinguishing organic from hysterical paralysis, when the latter has followed organic paralysis, as the characteristics of the hysterical paralysis have been suggested by those of the organic paralysis. An ordinary individual who develops hysterical hemiplegia shows no paralysis of his platysma muscle (Babinski's platysma sign), because he is likely to be unfamiliar with the action of the platysma, and being unaware of its existence would

continue to use it when the rest of the same side of the face was paralysed, but if the hysterical paralysis was a sequel of an organic paralysis the characteristics of the latter, including paralysis of the platysma, would be perpetuated.

Thus in hysterical hemiplegia and paraplegia following organic hemiplegia and paraplegia respectively most of the third group of physical signs, which are regarded as characteristic of organic disease, may persist. Being caused by suggestion, they are just as much a part of the hysterical condition as the paralysis itself, and like the latter they are completely removable by psychotherapy. Thus we have seen cases of organic paralysis followed by hysterical paralysis in which the platysma, pronation, and fan signs of Babinski, combined flexion of the thigh and pelvis ("Babinski's second sign"), ankle clonus quite indistinguishable from that present in organic disease, Raimiste's and various other signs, were present; but the condition was none the less hysterical, as the paralysis together with these physical signs disappeared rapidly and completely under psychotherapy.

The diagnosis of such cases may thus be extremely difficult, as hysterical paralysis following organic paralysis may not only be associated with permanent physical signs of organic disease, such as the extensor plantar reflex, caused by the residual organic disease, but also with the accessory signs, which are supposed to indicate the presence of organic disease, but which may themselves be really hysterical, being produced by suggestion and removable by psychotherapy.

Treatment.

There is a widespread tendency to adopt a waiting attitude in the treatment of acute organic nervous diseases which is sound if confined to the early stages, but becomes dangerous if it is continued for a longer period. The natural tendency of most acute diseases is towards recovery, but the functional capacity does not always tend to return *pari passu* with structural recovery, unless the physician makes use of psychotherapy in combination with re-education from the earliest possible moment. In organic hemiplegia following a head wound or an acute vascular lesion there is no reason why passive movements should not be commenced on the day of onset, and as soon as the patient's general condition permits he should be encouraged to attempt voluntary movements. When the hemiplegia is associated with aphasia re-education of speech should be begun at the same time. Treatment of this kind, in which psychotherapy is preventive rather than curative, is extremely important and leads to a maximum of recovery in a minimum of time. The same is true in such conditions as acute poliomyelitis, in which there is often too great a tendency to rely upon mechanical means, such as massage and electricity, and to forget the psychical side.

Illustrative Cases.

The following cases are some of the more striking examples we have seen in soldiers of severe symptoms resulting from organic injury or disease being perpetuated as a result of the grafting of an hysterical element on the original organic incapacity. The first case is perhaps the most remarkable of all, as for two years he had been regarded by everybody who had seen him as suffering from incurable organic hemiplegia, but recovery with psychotherapy was almost complete.

1. *Combined hysterical and organic hemiplegia of two years' duration following nephritis; almost complete recovery with psychotherapy.*—Pte. E., aged 23, reported sick on Sept. 29th, 1916 when he noticed some oedema of his legs. Nephritis was diagnosed and he was sent to a hospital. On Oct. 1st he had several fits and was unconscious for a few hours. When he recovered consciousness he was suffering from severe right hemiplegia, involving the face, arm, and leg, and he was also aphasic. He was transferred to England, and in July, 1917, as his urine was now free from albumin, he was transferred to a neurological hospital in London. The physician under whose care he remained for more than a year reports that on admission "there was complete right hemiplegia with late rigidity and aphasia and also facial paralysis on the same side. Wassermann reaction negative. Complete anaesthesia on the right side, tactile and thermal. No sphincter trouble. All deep tendon reflexes much exaggerated, right greater than left, well-marked ankle clonus right side; plantar reflex in effluite; tongue deviation to paralysed side. Later he developed spastic contraction of the right limbs." After a time he regained his power of speech with re-education. In May, 1918, a tenotomy was performed to overcome the flexion of his right knee. As this was not successful, his leg was subsequently twice moved forcibly under anaesthesia. The physician and several colleagues who saw him in consultation agreed that the hemiplegia was entirely organic.

In August, 1917, he was transferred to another neurological hospital in London, as an attempt to gain him admission to the Star and Garter Hospital had failed. There was still no improvement when he came

under our care at Seale Hayne Hospital in October, 1918. The right leg and arm were totally paralysed and absolutely rigid, the elbow wrist, and fingers being flexed and the knee semi-flexed. The face, including the platysma, was paralysed, but, as in ordinary organic hemiplegia, the upper part was not involved. The deep reflexes of the arm and leg were much exaggerated on the right side and slightly exaggerated on the left and well sustained; regular ankle clonus was present. The abdominal reflex was absent on both sides. The plantar reflex could not be obtained owing to the extreme degree of spasticity.

The spastic paralysis was treated by persuasion and re-education and in two and a half hours the patient was able to extend his leg and arm and move them slowly in all directions. At the end of another hour he was able to stand by himself and next day he was able to walk. This result was obtained without causing any pain to the patient in spite of the extreme rigidity. The exaggerated deep reflexes and ankle clonus remained unaltered, and an extensor plantar reflex was now obtained on the right side.

An attempt was next made to overcome the facial paralysis, and in 10 minutes there was marked improvement. After 45 minutes' treatment the facial paralysis had disappeared and the platysma was contracting normally.

The patient is now (January, 1919) able to use his right hand for all ordinary purposes—e.g., writing and needle-work—and he walks with only a slight limp.

2. *Hysterical hemiplegia with persisting signs of organic disease following concussion by shell explosion cured by psychotherapy after persisting for eight months.*—Pte. T., aged 22, was admitted to Seale Hayne Hospital on June 20th, 1918, for hemiplegia of the left side, which developed as a result of being blown up by a shell eight months before. He could only stand with assistance and was quite unable to walk. There were definite signs of an organic nervous lesion; the left plantar reflex was extensor, the abdominal reflex was absent, the ankle, knee, wrist, and elbow jerks were much exaggerated on the left side, and well-sustained ankle clonus was present.

In spite of this it was decided that the condition was probably to a large extent hysterical, and the patient was treated by vigorous persuasion and re-education. Within an hour he was made to walk and run, but it took five or six days to develop a normal walk and a natural carriage of the left arm, which was at first held in front of his left thigh. A fortnight later a distinguished neurologist who was visiting the hospital watched him playing billiards, and was asked to guess which had been the hemiplegic side, but the functional recovery was so complete that he was unable to do so, although all the physical signs of organic nervous injury were still present and had not altered when the patient was discharged from the hospital, feeling perfectly well, two months later.

3. *Combined hysterical and organic hemiplegia of 11 months' duration, following gunshot wound of the skull; great improvement with psychotherapy.*—L./Cpl. B., aged 23, was wounded in the right parietal region in December, 1917, and was admitted to a general hospital in France with left-sided hemiplegia. Anaesthesia was noted over the left leg up to the knee and over the left hand and arm to a point just above the wrist. The report states that he could wriggle his toe and finger. On Dec. 28th an operation was performed and a small crack in the skull was found; some bone was removed, but no injury to the dura mater was discovered, and pulsation was normal. The bone was replaced and the wound sutured.

On April 3rd, 1918, when in hospital in England the following report was made after a detailed investigation of his cutaneous sensibility. "Loss of sensation over the whole of left leg up to the groin, and over the left side of trunk behind a line drawn from the anterior superior spine of the ilium to the middle of the armpit. Loss of sensation over the upper limb up to the armpit and on the outer surface as far as the acromion process. Sensation of heat corresponds with tactile sensation. No sense of joint movement in upper or lower limbs."

On July 17th, 1918, he was transferred to Seale Hayne Hospital. The arm was rigidly extended at the elbow, the fingers were extended at the metacarpo-phalangeal joints, but flexed at the interphalangeal joints. The leg was rigidly extended at the hip and knee and the foot was fixed in a position of extreme dorsiflexion. The deep reflexes were increased on the left side and well-sustained and regular ankle clonus was present. The big toe did not take part in the plantar reflex, but the fan sign was present on the left side. The degree of rigidity was extreme and the strongest effort was required to bend any joint.

The patient was treated by persuasion and re-education; movement in all joints, except the shoulder, was obtained in one sitting of four hours without much discomfort to the patient. His temperature rose the next day, and he developed pleurisy with effusion, which necessitated the postponement of further treatment for over two months. Psychotherapy was then continued and he quickly learnt to walk well. He still has some spasticity, but is slowly improving.

At the present time (March 2nd, 1919) there are no signs of organic disease, the ankle clonus and increased deep reflexes having disappeared.

Whilst in France limited anaesthesia was found with slight movement of the extremities; eight months of treatment with electricity and massage only had the effect of making the paralysis absolute and increasing the area of hysterical anaesthesia; the aggravation of symptoms was clearly due to suggestion unconsciously applied by his medical officers. If the patient had been encouraged to move from the first progress would have been steady and recovery would quickly have taken place.

4. *Syphilitic meningo-myelitis complicated by hysterical paraplegia.*—L./Cpl. M., aged 20, reported sick on April 8th, 1916, with pain in the legs. A fortnight later he noticed weakness and became unable to walk. There was some loss of control over the bladder and rectum during May. On admission into hospital he was quite unable to walk, but the loss of power in the legs was incomplete. Sensation was normal. The knee- and ankle-jerks were exaggerated and ankle clonus was well marked. The abdominal reflexes were absent. Plantar reflex was examined on several occasions and was invariably flexor on both

sides, but no doubt was felt by the consulting physician who saw him in France that there was organic disease affecting the lateral columns.

On reaching England the Wassermann reaction of the blood was found to be positive, and there was some tenderness of the spine. Iodides were given but no improvement occurred, so that the original diagnosis of syphilitic meningo-myelitis was discarded for disseminated sclerosis.

He came under our care for the first time in December, 1916. There were now no physical signs of organic disease, and it was clear that the paraplegia was hysterical. With persuasion and re-education he rapidly recovered. He was then given intensive anti-syphilitic treatment until the Wassermann reaction was no longer positive.

The paraplegia was probably at first organic and due to syphilitic meningo-myelitis. The iodide doubtless led to recovery from the organic lesion, but the paraplegia was perpetuated as an hysterical condition, which only disappeared when treated by persuasion and re-education.

5. *Hysterical paraplegia following organic paralysis due to concussion by shell explosion, cured by psychotherapy two months after the onset.*—Pte. M., aged 25, enlisted in September, 1914, and served for six months in France and a year in Salonika. He was very fit the whole time, and was never worried by the shell fire. On Nov. 22nd, 1916 he was blown up by a shell, and remained unconscious for four days with signs and symptoms of complete organic left hemiplegia with paresis of the right leg, and incontinence of urine and faeces. He began to answer questions on Dec. 2nd, and complained of severe headache. His knee-jerks were then greatly exaggerated, especially the left, and the plantar reflex on both sides was extensor. The headache soon disappeared and the paralysis gradually improved, but he was still quite unable to walk when he reached Netley on Jan. 24th, 1917.

He had no recollection of anything between the fight in which he was blown up and the last few days in Malta. The right knee-jerk was 6, the left 7 (average normal 4); the left plantar reflex was still extensor, but the right was now flexor, and the left abdominal reflex was absent. The inability to walk was clearly hysterical, and it disappeared the day after admission as a result of persuasion; with further re-education he soon learnt to walk without even a limp.

When next examined, on Feb. 2nd, the left plantar reflex had become flexor, and the left abdominal reflex was as brisk as the right; but Babinski's second sign (combined flexion of thigh and pelvis) was still very definitely positive and the knee-jerks were as before. The Wassermann reaction was negative.

He was discharged to duty in April, the superficial and deep reflexes being normal and equal on the two sides, but Babinski's second sign was still present, though less marked.

A striking point in this case was the disappearance of the extensor plantar reflex, which had persisted for 64 days, within 9 days of the hysterical paraplegia being cured.

6. *Hysterical paralysis associated with organic paralysis due to haematomyelia, the result of spinal concussion following shell explosion.*—Pte. A. C., aged 24, on Feb. 19th, 1917, was blown three feet into the air, falling heavily on his face. He did not lose consciousness, and he is quite certain that his head was not doubled under him. He was unable to move for several hours, except that he managed to raise his face out of the mud in order to breathe.

On being taken to hospital he remained quite helpless. His elbows were kept acutely flexed, as in a lesion of the fifth cervical spinal segment. His right arm and leg were completely paralysed, and only very feeble movements were possible on the left side. He had much aching and tingling pain in his limbs and a spasmodic pain in the calves. He had some retention of urine during the first day and a catheter was passed on one occasion, but after this his bladder and rectum showed no abnormality. Though listless and suffering from headache, his mind was not confused and his speech was normal. Knee-jerks were very weak and no definite plantar reflex was obtainable.

By April 20th a slight degree of power had returned in the right arm; both arms were still painful. On May 12th it was noted that, although there was no anaesthesia, sensation to light touch was diminished up to the region of the clavicle. The headache had disappeared and the pain in the limbs was well marked. Slight improvement in power occurred as a result of massage, but the muscles remained flabby and began to waste. By May 22nd the muscular tone had improved. The knee-jerks were now increased, ankle clonus was elicited on the right side, and the plantar reflex was extensor on the right side but normal on the left; both abdominal reflexes were absent.

On admission to Netley on May 30th he could move both arms and both legs but they were very weak, the right side being worse than the left. Slight pain was still present in the hands and arms, but the pain in the legs had disappeared. There was marked wasting of the muscles of the upper limbs, especially of the hands, the atrophy and weakness of the right hand being severe. The right knee-jerk was 5 and the left 4½ (normal 4); true ankle clonus was present on the right side and also, though less well maintained, on the left. No abdominal reflexes were obtained and the plantar reflex was definitely extensor on both sides. The skin was much thickened over the palms of the hands and soles of the feet.

It seems clear that a haemorrhage occurred into the cervical spinal cord at the time of the explosion, probably as a result of aerial concussion rather than of the concussion caused by falling after being blown into the air, as the patient is quite certain that the fall did not hurt him particularly and that he could not put out his arms to save himself when he was in the air.

On June 11th the patient was still unable to sit up in bed and there was no improvement in the condition of his arms and legs. It seemed possible that some of the incapacity was hysterical in spite of the definitely organic basis. He was therefore treated by very vigorous persuasion, and, although he would make no effort at first, at the end of five minutes he was sitting up in a chair, and at the end of a quarter of an hour he was able to stand and take a few steps with comparatively little support. During the next ten days he learnt to stand and walk with an almost normal gait and without assistance.

Since then steady improvement has occurred both in the hands and legs; his gait is almost normal, and he can use his hands for all ordinary purposes, though there is still some atrophy and weakness of the small muscles. When discharged on Oct. 23rd the wrist-jerks were normal;

the right knee-jerk was 7, the left 6, and slight ankle-clonus was obtained on the right side. The right plantar reflex was extensor, the left flexor. The abdominal reflexes had not returned.

The condition must have been largely hysterical, and due to auto-suggestion causing the perpetuation and exaggeration of symptoms which were originally entirely organic and were still to some extent a result of organic changes in the spinal cord.

7. *Hysterical paraplegia following organic paraplegia, due to a wound of the spine received 17 months previously.*—L. Col. R., aged 43, was wounded in the back by shrapnel on Sept. 27th, 1916. He immediately became paraplegic. A laminectomy of the sixth and seventh dorsal vertebrae was performed on Oct. 10th, and a piece of shrapnel was removed, but no details about the operation are obtainable. He had incontinence of urine and constipation for several weeks. By the end of February, 1917, he could get about on crutches with difficulty. He was transferred from hospital to hospital before he was finally transferred to our care at Netley on March 27th, 1918.

On admission he could only stand with the aid of crutches. The right knee-jerk was markedly exaggerated (9), with response to the lower end of the tibia and slight spread to the opposite side; ankle clonus was marked and sustained, but the plantar reflex was flexor. The left knee-jerk was 8 (average normal 4), ankle clonus was present, but not so well sustained, and the plantar reflex was flexor. With persuasion and intensive re-education he was walking in less than an hour. In a month his gait was normal, but rather heavy. The signs of organic disease remained unaltered. He was then discharged from the service, but was quite fit to follow his civil occupation.

8. *Spinal concussion involving posterior columns associated with hysterical paraplegia.*—Pte. W., aged 32, was buried by a collapsing trench on July 5th, 1917; he was fit in every way before this happened. When admitted to hospital in France he was unable to speak or move his legs, and it was found that he had no knee-jerks. His speech returned in a few days after stimulation with faradism, but he continued to stammer.

On admission to Netley on August 28th he was still completely paraplegic and had a severe stammer; both knee- and ankle-jerks were completely absent, and there was considerable rigidity of the legs. The plantar reflexes were normal. As a result of vigorous suggestion with the aid of faradism he was induced to walk on the day of admission, and with re-education his speech and gait slowly improved.

At the beginning of January, 1918, the knee- and ankle-jerks were still absent and a slight Romberg sign was present, but he walked almost normally. The Wassermann reaction of the blood and cerebrospinal fluid was negative, and no abnormal cells were found in the latter.

It seems probable that the loss of jerks and the incoördination were due to the spinal concussion having involved especially the posterior columns, as in a fatal case described by Lieutenant-Colonel F. W. Mott. The response to treatment by suggestion and persuasion shows that in spite of this the paraplegia was largely hysterical in origin, the paralysis due to the concussion being perpetuated by suggestion. The speech defect was, of course, entirely hysterical.

It is generally taught that incontinence of urine is never hysterical. But although the idea of incontinence is very unlikely to suggest itself to an individual spontaneously, it is not uncommon for the incontinence which is normal in babies to be perpetuated into childhood or even adult life as an hysterical condition. Several cases of this sort in soldiers have been described in the "Seale Hayne Neurological Studies," by Captain J. W. Moore, M.C., U.S.A., to whom we are also indebted for the description of the following case of hysterical incontinence, occurring as a sequel of the incontinence caused by the temporary organic changes resulting from concussion of the spinal cord.

9. *Hysterical incontinence of urine and hysterical paraplegia following concussion of the spinal cord, with organic physical signs.*—Pte. M. P. was buried in a trench in France in July, 1916. He was dug out and admitted to hospital suffering from weakness of his legs and incontinence of urine. This condition continued until he was admitted to Seale Hayne Hospital on August 21st, 1918. On admission he could only walk with a shuffling and tremulous gait. He had generalised tremors, especially of the head and neck, and was wearing a urinary bag and night on account of incontinence. The abdominal reflexes were absent on both sides, the knee-jerks were slightly increased (5 to 6), and slight ankle clonus and a definite extensor plantar reflex were present on both sides.

The incontinence was treated by persuasion and re-education. In a short time it was controlled during the day, but at first persisted at night. He was then treated by hypnosis, and after three weeks was completely cured. With the relief of the incontinence the paraplegia also disappeared, and he can now walk quite well, although the physical signs are unaltered.

In the following case blindness of a character generally supposed to be typical of organic disease was perpetuated as a hysterical symptom after the initial organic changes in the brain had disappeared.

10. *Partial hysterical blindness following organic blindness caused by a wound in the occipital region and associated with hysterical deafness.*—Pte. W., aged 22, was wounded over the right occipital region on June 7th, 1917. He was unconscious for five days and was then trephined. On admission to Netley on July 6th, 1917, he was completely deaf in both ears, but as the vestibular reactions on rotation were normal the deafness was regarded as hysterical. It was noticed that he had difficulty in seeing and that he held anything he

wished to read low down on the right side, although he volunteered no complaint about this, and only spoke about his deafness. On further examination it was found that he was totally blind except in the right lower quadrant of the field of vision of both eyes, the blindness being what might be expected to result from the wound over the lower part of the right occipital lobe, near the middle line, which would be likely to involve the left lobe also to a less extent.

An attempt was made at the end of August to cure the hysterical deafness by a pseudo-operation, the patient being told that a cut behind his ear would certainly restore his hearing. Nothing was said to him about his blindness, which was regarded as organic. The "operation" resulted in immediate improvement in his hearing, as it was now possible to carry on a conversation with him by shouting. Quite unexpectedly it was found that his vision was now absolutely normal, the blindness having been cured by the suggestive effect of the "operation."

It must, therefore, have been due to perpetuation by auto-suggestion of the organic blindness, which was caused by concussion rather than destruction of the occipital lobe.

11. *Mental symptoms and hysterical paraplegia, aphasia, and incontinence of five months' duration following a wound of the brain cured by re-education, persuasion, and suggestion.*—Pte. P., aged 27, was wounded in the left temporal region on Dec. 6th, 1917. The dura mater was found to be torn and brain matter was escaping. A foreign body lying half an inch deep was removed and the wound was closed. On Dec. 20th the patient had slight paresis on the left side of face and on Feb. 4th 1918, he is reported to have had a fit. He was admitted to Netley on March 20th, 1918, after being in bed for 73 days in another hospital in England.

He was drowsy and listless and was unable to articulate. He was completely paraplegic and passed urine and feces in the bed. There were, however, no signs of organic disease. He was at once made to get up in a chair and encouraged to take an interest in his surroundings. In a few days he became clean in his habits and his speech returned.

A month after admission his mental condition was sufficiently clear to make it possible to treat the paraplegia by persuasion. He improved slowly and by May 24th was able to walk with a pseudo-apastic gait. The next day he was treated by direct suggestion by means of faradism, and in 15 minutes was walking well and climbed two flights of stairs to see a friend. He has now returned to his old trade as a carpenter, and he is sound mentally as well as physically.

References.—1. A. F. Hurst and J. L. M. Symms: Review of Neurology and Psychiatry, 1918, xvi., 1. Seale Hayne Neurological Studies, 1918, i., 1. 2. J. L. M. Symms: Quarterly Journal of Medicine, 1917, xi., 33. 3. A. F. Hurst and S. H. Wilkinson: Seale Hayne Neurological Studies, 1918, i., 24. 4. J. W. Moore: Seale Hayne Neurological Studies, 1919, i., 141.

NOTE ON DETOXICATED VACCINES.

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DURING the past year the author has conducted extensive researches on the removal of the endotoxins from the gonococcus and other organisms in order to produce non-toxic vaccines which could be injected in sufficiently large doses to develop a great amount of immunity.

Development of Immunity.

Recent researches all point in the direction that it is very difficult or almost impossible to develop antibodies to the endotoxins of germs. The only successful antitoxins so far produced are those against the exotoxins, such as are developed by the diphtheria and tetanus bacilli. The toxins of the majority of pathogenic organisms, however—e.g., the gonococcus, meningococcus, typhoid bacilli, &c.—are endotoxins, towards which little or no immunity is developed, *vide* Wells (1918).¹

All observers are agreed, on the other hand, that agglutinins, precipitins, complement-deviating substances, and bacteriolysins, can be developed in a considerable degree against the actual germ substance itself. If we take the gonococcus for an example, it is found that subcutaneous inoculations of the germ into man or animals induces the formation of agglutinins, precipitins, complement-deviating substances, and bacteriolysins in the blood. Thus immunity is developed towards the gonococcus itself, whilst, on the other hand, no successful antitoxin has so far been developed by inoculations towards the gonococcal endotoxins. It seems most reasonable to assume, therefore, that no advantage is to be gained by injecting the toxin and that it should be removed if possible so that larger doses of the actual germ substance may be administered.

Torrey (1908)² found that inoculations of gonococci into guinea-pigs produced no detectable immunity if the dose administered was less than 1/16th of the fatal dose.

Whereas, when inoculations amounting to 1/8th to 1/12th of the fatal dose were given, marked immunity was produced. It would appear, therefore, that to get a large amount of immunity large doses must be injected. Unfortunately most pathogenic organisms are so toxic that such large doses are impossible.

Reasoning in this manner, it seemed desirable that the removal of the endotoxin from germ for vaccine purposes, since its present conditions elongate stages and no advantages. The process of the removal of the endotoxin without at the same time altering the nature of the remaining non-toxic germ substance, so that the latter would still be potent in stimulating the production of agglutinins, precipitins, &c.

Detoxicated Gonococcal Vaccine: Serological Tests.

The procedure which was adopted to attain this end will be described in a detailed paper almost immediately. At any rate, the toxicity of most germs was successfully reduced some 50 to 100 times. Thus, with ordinary gonococcal vaccine it was found necessary to begin in acute cases with doses not exceeding 5 millions and gradually to increase to about a maximum of 250 millions. On the other hand, the same strains of gonococci when detoxicated could be administered in acute cases in doses of 2500 millions and increased to 10,000 millions. These large doses caused even less toxic symptoms than the small doses of the ordinary vaccine.

To test the therapeutic value of the new detoxicated vaccine a large number of complement-fixation tests were carried out on gonorrhoeal cases in three parallel series, treated at the same time by the same clinician.

Series A received no vaccine treatment.

Series B were treated with ordinary gonococcal vaccine.

Series C were treated with large doses of detoxicated gonococcal vaccine.

The amount of complement deviated in the presence of antigen and serum was estimated weekly in each case, as it seemed reasonable to suppose that the amount of immunity produced could be estimated by this method. Thus one minimum hæmolytic dose of complement fixed was taken to represent 1 unit of immunity, two M.H. doses fixed represented 2 units of immunity, and so on.

Series A showed on the average some 3 units of immunity acquired naturally in the course of the disease.

Series B showed an average of about 4 to 5 units of immunity indicating the value of ordinary vaccine.

Series C showed an average of about 8 to 12 units of immunity showing a marked superiority of the new vaccine.

The therapeutic results obtained corresponded very markedly with the serological tests. Thus it was found that the cases which showed the highest degrees of immunity as estimated by the complement-fixation test recovered much more rapidly, and *vice versa* in those which showed a low degree of complement-fixation the disease ran a prolonged course.

Results obtained with Inoculation in Normal Individuals.

Ordinary gonococcal vaccine was injected into several normal persons who had never suffered from gonorrhoea, and who gave a completely negative complement-fixation reaction. In these cases it was found by repeated tests that no complement-deviating substances were developed in the serum after an injection of 100 millions of ordinary gonococcal vaccine, followed by 200 millions six days later.

On the other hand, a dose of 5000 millions of detoxicated gonococcal vaccine induced the formation of sufficient anti-substances in the blood to give a double positive reaction, and a dose of 10,000 millions developed a triple positive reaction in another normal person, whose blood was previously negative.

Moreover, the dose of 200 millions of ordinary gonococcal vaccine produced malaise and fever in the normal subject, whereas the symptoms arising from a dose of 5000 millions of the detoxicated vaccine were scarcely noticeable and no fever was induced.

Further experiments have been carried out with detoxicated vaccines for the prevention and treatment of bronchial and nasal catarrh and the results so far have been very promising. The clinical evidence is increasingly convincing that this detoxication process will revolutionise the whole subject of vaccine treatment and preventive inoculation. I wish to thank my commanding officer Bt. Col. Harrison, D.S.O., K.H.P., for the kind interest he has taken in this work.

¹ Wells (1918): Chemical Pathology. W. B. Saunders Co.

² Torrey (1908): A Study of Natural and Acquired Immunity of Guinea-pigs to the Gonococcus. Jour. Med. Res., xviii., 347.

SPIROCHÆTES IN THE BLOOD IN
TRENCH FEVER.BY ALFRED C. COLES, M.D., D.Sc. EDIN., M.R.C.P. LOND.,
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For three years I have examined a very large number of films taken from cases of trench fever in France and in local military hospitals. For the former I desire to thank Captain Adrian Stokes, R.A.M.C., and especially Captain A. T. Nankivell, R.A.M.C., for kindly sending me films from France.

The Difficulties Met With.

In common with so many other observers, my attention was primarily directed to the search for spirochætes, as the disease has many characteristics of a spirochaetosis. Nothing but failure resulted from very prolonged efforts. Whatever be the cause of trench fever, it exists either in very small numbers or in the form of some minute, characterless, or invisible organism, otherwise it would have been detected before this.

It is quite conceivable that the causal organism is present in exceedingly small numbers in the blood. In syphilis, in rat-bite fever, and in infectious jaundice spirochætes are definitely known to be the cause, and in each case occur in the peripheral blood at one or other stage of the disease; yet how many observers have succeeded in finding them in human blood? My own experience in the case of infectious jaundice illustrates this. Captain Adrian Stokes kindly sent me eight blood films taken from a definite case of infectious jaundice on the fourth day of the disease. A fortnight's examination entirely failed to find a single spirochæte. Subsequently he sent me six films from a case on the second day of the disease, and after numerous very prolonged examinations extending over several days I found two spirochætes.

Further, it is probable that if spirochætes do occur in the blood of trench fever they will be more likely to be found during the first attack, and it is not always easy to say from the first attack of fever what the condition may turn out to be. Of the numerous films that I examined from cases in our local hospitals none were earlier than the third or fourth relapse.

Present Investigation.

In order to obtain blood films from the earliest stage of trench fever I applied to General Sir David Bruce, chairman of the Commission on Trench Fever, and he asked Major W. Byam, R.A.M.C., to send me films from successfully inoculated or scarified men at the Hampstead Military Hospital, both just before and during an attack of the disease. I take this opportunity of expressing my thanks to both of these workers for their kindness.

In two out of six of these cases I have found a few spirochætes or spirochæte-like bodies in one or two of the many blood films examined. Major Byam's notes on these cases were as follows:—

CASE 1.—Peripheral blood smears, 3.15 P.M., April 14th, 1918. On April 14th, at 11 A.M., developed trench fever as result of inoculation with infected lice excreta. Incubation eight days. Onset with frontal headache and pain in left hip, left side and down left arm. (Left arm was seat of scarification.) 3.15 P.M.: Slight shivering and increased headache. T. 102° F.; P. 84. Pains in muscles of thigh and in both hips and loins. April 15th, 10 P.M.: Second day of disease. Blood films.

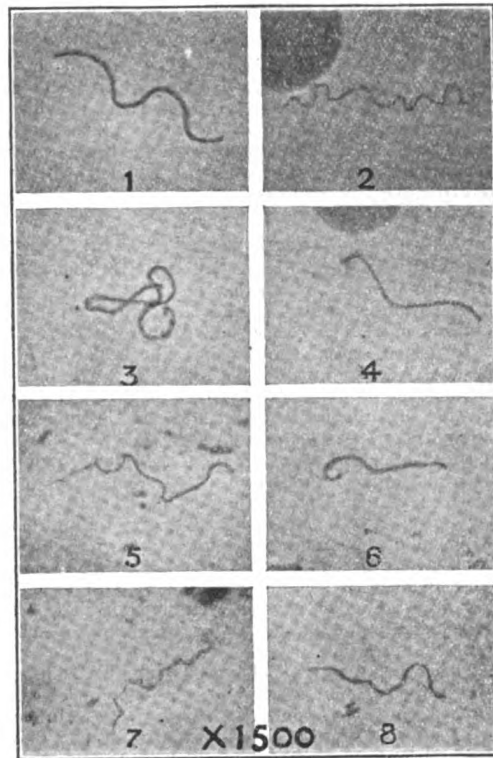
CASE 2.—Blood films, 11.20 A.M., Nov. 13th, 1918. First attack of fever.

The spirochætes or spirochæte-like structures vary considerably in their form, but they have in common the fact that they are all stained with Giemsa a delicate blue tint; they are all faintly granular, and in no case are the ends pointed. Figs. 1, 3, 4, and 6 could be found with the 1/12 oil immersion objective. Figs. 2, 5, 7, and 8 are very faint indeed, and the photomicrographs show them even better than they are seen under the microscope.

I have marked the position of each by a small ring on the film by a diamond-marker; the size of the ring is such that the whole is included in the field with a magnification of 240 diameters. Yet when such a ring is examined with a 1/12 objective it is most difficult to find the organism, especially that shown in Figs. 5, 7, and 8. It would therefore be almost impossible to find such a structure by direct examination with an oil immersion lens. I found them by means of

dark-ground illumination, logged and marked their position before mounting. This fact may vitiate against Figs. 5, 7, and 8 being regarded as spirochætes.

The photomicrographs give a better impression of the appearance of the structures than any description.



Spirochætes in blood films of trench fever. The original microphotographs have been slightly enlarged in reproduction, and the magnification is now $\times 2000$.

FIG. 1 (Case 1).—Blood film A, taken at 10 P.M., April 15th, on second day of fever; open wavy spiral, ends round, length 12.6μ with two turns, diameter 0.4μ , slightly denser stained areas are seen in its course.

FIG. 2 (Case 1).—Blood film B, taken at 3.15 P.M., April 14th, on first day of fever; length 13.3μ with five spirals, small and slightly irregular.

FIG. 3 (Case 1).—Blood film C, taken at 10 P.M. April, 15th, on second day of fever; an irregular knotted form.

FIG. 4 (Case 1).—Blood film D, taken at 3.15 P.M., April 14th, on first day of fever; a wavy filament with one or two turns, with very fine granules, length about 11μ .

FIG. 6 (Case 1).—Blood film D, taken at 3.15 P.M., April 14th, on first day of fever; similar wavy filament.

Figs. 5, 7, and 8 (Case 2).—Blood film I, taken at 11.20 A.M., Nov. 13th, during first day of fever; faintly stained filaments, with numerous irregular spirals.

Consideration of the Findings.

The questions which naturally arise are these actual spirochætes, and, if so, what relation have they to trench fever?

In answer to the former question, they have the general appearance of spirochætes, although those from the second patient are very elusive, of slight refractive power, and very difficult to see. The staining reactions with Giemsa, a pale blue colour, is not, however, common in spirochætes in general. They cannot be regarded as artefacts, and the faint irregular structures in Figs. 5, 7, and 8 cannot be compared to "streamers," which, in my experience, are never met with in ordinary air-dried stained films.

Whether they have any actual causal relation to trench fever is much more difficult to say. The fact that they were detected only in the blood of definite cases of artificially induced trench fever, and then only during the first attack of fever, is at least suggestive. The generally accepted statement "that at least in one stage of development the virus of trench fever is filterable" does not exclude that virus being a spirochæte. Some spirochætes are known to be filterable, and Noguchi states that the *Spirochæta icterohæmorrhagica* will pass the Berkefeld candle V.

THE LOWER UTERINE SEGMENT AND UTERINE TENDONS.¹

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GYNÆCOLOGISTS are, or should now be, agreed that the uterus owes its stability to its connexion with the fibro-muscular bands which surround the cervix at the level of the os internum and radiate in all directions to their attachments in the pelvis. These fibro-muscular bundles show an unequal distribution, and where best developed they are indicated by distinctive names—viz., sacro-uterine ligaments, lateral ligaments of Mackenrodt, &c.

"Uterine Tendons."

The anatomists' description of this tissue is that it forms an imperfect diaphragm, stretching across the pelvic cavity, with an aperture towards its centre through which the neck of the uterus fits. This conception cannot be correct, for were it so destruction of the diaphragm would follow as a result of the first parturition. When it is remembered to how full an extent the foetal head occupies the cavity, it is inconceivable that a membrane torn to such a degree could ever renew its original continuity. Experience, however, teaches that this diaphragm remains uninjured by normal childbirth, and therefore the only inference which can reasonably be deduced from the fact is, that these fibro-muscular bands are not interwoven one with another to form a continuous membrane but pass separately into the uterus and are centred in this organ. Thus the muscle bundles at the internal os must exercise a direct control over this fibro-muscular tissue. The opening of the os permits a slackening of the fibrous diaphragm and closure of the os renews its tension.

In this respect the tissue behaves as tendons do in other parts of the body, and surely "uterine tendons" is the name that should be applied to them. From inductive reasoning I surmise that this fibro-muscular tissue is derived from the uterine muscle and not from pelvic fascia or parametrium.

The recognition of the above mechanism has made clear many obscure phenomena in obstetrics and gynaecology. It is evident that the uterus after childbirth owes its great mobility to relaxation of the uterine tendons, and the same condition permits the vaginal fornices to be pushed by vaginal plugging so far up into the abdomen as to stop the circulation in the uterine arteries. During the performance of Caesarean section I have been able to demonstrate the latter fact to a number of experts, so that the question is no longer in doubt.

In a nulliparous woman the cervix is also closed by a certain amount of fibrous and elastic tissue which is probably derived from the pelvic fascia. This tissue is torn during childbirth, and the tearing accounts for the different behaviour of the multipara's and primipara's cervix during the process of dilatation.

The Lower Uterine Segment.

The lower uterine segment is formed by a growth and is not a mere stretching of pre-existing tissue. It is impossible to account for its presence by any other explanation, and it can be clearly shown that the cervix is the structure of all others which most readily responds by growth to a continuous pressure.

It is wrong to regard the cervix as consisting of tissue prone to stretch. It possesses this property within very narrow limits, and efforts at forcible dilatation, whether during childbirth or in the unimpregnated, are prone to be followed by extensive ruptures. On the other hand, it is capable of phenomenal growth when exposed to a continuous pressure strain. In procidentia uteri its supravaginal portion becomes enormously hypertrophied. In spite of its greater length its diameter does not diminish, which clearly shows that the process is one of hypertrophy.

The following experience well illustrates this point. During the performance of ovariectomy on an old woman with prolapse of the uterus I amputated the uterus above

the os externum and stitched the small stump to the abdominal fascia in an effort to keep up the prolapse. In a year the condition was worse than ever. The stump had held to the abdomen, but the small cervix had hypertrophied and again permitted the vagina to turn inside out. In this instance the cervix must have increased to twenty-fold its original size, and there is no other structure capable of this wonderful metamorphosis.

The cervix does not under normal conditions because of the protection it receives from the uterine tendons. These keep the uterus in equilibrium and take up all abdominal strain. The cervix lying beneath them is thus freed from pressure.

When pregnancy occurs the internal os opens and the ovum finds room for its increasing growth in the upper region of the cervix immediately beneath the uterine tendons. In response to this stimulus the upper part of the cervix hypertrophies to form the lower uterine segment. The fact that this segment is a growth comparable to that which occurred in my case of uterine prolapse accounts for its formation without any appreciable shortening of the cervix, and satisfies the objections of those who doubt its cervical origin because of the almost undiminished change in the length of the cervix during pregnancy.

The last question to be considered is that of the true boundary line which separates the cervix from the body of the uterus. Attempts to define this boundary have been made by microscopic and macroscopic efforts, but I am not aware that anyone has before suggested that the tant uterine tendons constitute the one and only division between them. The cervix must then be defined as that portion of the uterus which normally escapes pressure by lying beneath a portion of the uterine tendons.

Dublin.

ATTENUATION OF HUMAN, BOVINE, AND AVIAN TUBERCLE BACILLI.¹

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THE object of this short paper is to demonstrate the effect of long-continued and regular subculturing of pure cultures of human, bovine, and avian tubercle bacilli on artificial media containing glycerine. This process has been continued without interruption for 12 years and the cultivations are luxuriant and grow as readily as in the first year of subculturing. They retain all their characteristic and selective appearances, and can be easily identified as distinct types of tubercle bacilli.

Inoculation of rabbits and guinea-pigs by human and bovine bacilli have been made at intervals during the last 12 years (the full details of which will be published later), with the result that there has been a gradual decrease in virulence until at the present time they are almost non-pathogenic to animals.

History of Cultures.

The original culture of human bacilli was given to me by the late Professor Koch in 1906, and was prepared by him from the sputum of a case of primary pulmonary tuberculosis. The patient had suffered from phthisis for four years, and the culture was made in the last stages of the disease.

The original bovine culture was sent to me by Professor Calmette, of Lille, and was from the mesenteric glands of a cow which had been destroyed for advanced tuberculosis of the udder. The avian culture was sent to me by Professor Bang, of Copenhagen, and was from a chicken which died from epidemic tuberculosis in fowls.

Careful photographs were taken of the original cultures and at intervals up to the present time. All of these retain in a remarkable degree the exact and typical appearances of the original type, and can be easily and readily identified.

Avian bacilli being non-pathogenic to man need not be considered in this paper.

The important fact to bear in mind in the study of tuberculosis, and which has been amply demonstrated by a long-continued study of the subject is, that (1) the human body is

¹ A paper read at the Royal Academy of Medicine in Ireland (Section Obstetrics), Feb. 14th, 1919.

¹ A paper read before a Medical Society in France, at which cultivations of the organisms were shown.

attacked by two distinct types of bacilli—namely, human and bovine; (2) those two types of bacilli cannot grow in the body at the same time; (3) their method of infection is different and selective; (4) human and bovine bacilli are antagonistic to each other, and a mild infection of one type in the human body will produce an immunity to the other type.

Selective Infections.

The great bulk of tuberculosis is caused by *human bacilli* directly infecting the lungs and setting up primary pulmonary tuberculosis, pleurisy, tuberculous laryngitis, and secondarily tuberculous enteritis. As a general rule, these infections are limited to the respiratory organs and intestines, and in progressive cases death results from exhaustion and toxæmia.

Bovine bacilli are generally conveyed to the body in tuberculous milk and food and infect the various organs through the lymphatic channels. These infections are, as a rule, limited to children and early adult life.

The lesions usually produced are: (1) Primary abdominal tuberculosis (tabes mesenterica); (2) tuberculous glands; (3) tuberculosis of bones and joints; (4) meningitis and lupus; (5) tonsils and adenoids (occasionally); (6) miliary tuberculosis.

A person with primary pulmonary tuberculosis is not likely to develop a tuberculous bone or joint, and a primary bovine infection is not likely to develop a primary tuberculosis of the lungs. The lungs are, however, not infrequently infected in the course of a bovine infection of other organs.

Tubercle bacilli of bovine type would seem to be met with in from 10 to 30 per cent. of samples of milk submitted to bacteriological examination (Delépine). If the milk is not boiled or sterilised there is ample opportunity for the infection of susceptible children.

The organisms (human and bovine) are not transmutable, and cannot by any artificial growth be changed from one to the other type.

Treatment of Tuberculosis.

The real object of this work was to find out if it was possible to reduce the virulence of the bacilli to such a degree that it might be possible to use them therapeutically in the treatment of active tuberculosis. The longest period before recorded of the attenuation of these bacilli was three years, and that was not found to be enough.

Whilst a member of the International Committee on Tuberculosis I undertook in the year 1905 to subculture human and bovine bacilli for ten years. Unfortunately, owing to the war, the clinical work was interrupted during a four years' residence in France, but the subculturing was continued in my laboratory at home.

In 1914 several animals were inoculated with these bacilli of nine years' attenuation with practically negative results. In no case was any progressive tuberculous process set up in the animals, and post-mortem examinations showed no active tuberculosis.

Eight cases of apparently hopeless tuberculosis of the glands, bones, joints, and lupus, all with discharging sinuses, were treated with injections of living bacilli at intervals of one week. The injections were made subcutaneously in the triceps region, and beyond redness and slight swelling no bad effects were observed, and the patients noticed nothing unusual.

Later, four cases of acute and active pulmonary tuberculosis with large numbers of bacilli in the sputum were treated in the same way, and I have just seen and examined a hospital sister who was treated five years ago and is now on full duty and quite cured. So far as I know, all these patients are still living, and a full report will be published after an interval of five years from the date of treatment.

The whole of the cases were treated by mixed bacilli, the cultures being raised to a temperature of 220° F. for two minutes before injection.

All doctors are agreed that the treatment of tuberculosis is not satisfactory, and the results so far obtained are not what we might expect. After a personal experience in the treatment of over 4000 cases of tuberculosis in hospital and private there is no doubt whatever that so-called surgical cases (which, in my opinion, are chiefly of bovine origin), give the best results. Tuberculin in a great many cases gives excellent results, but the duration of the immunity produced

is too short and the tuberculin treatment has to be continued for a long period.

Our whole object in attempting to cure tuberculosis is to prevent the growth of the bacilli in the body, and I feel sure this can only be done by some specific method as described in this paper.

The cases treated are too few and the time which has elapsed is too short to form any definite and final conclusions, but I feel encouraged to think that the careful use of such attenuated bacilli may have the effect of controlling and probably preventing tuberculous infections in the human body in much the same way as vaccination protects against small-pox, and antityphoid vaccine against typhoid fever.

Harley-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GONORRHOEA

COMPLICATED BY ACUTE GONORRHOEAL ARTHRITIS AND KERATOSIS, RESEMBLING A MIXED INFECTION OF GONORRHOEA AND SYPHILIS.

By NORMAN P. LAING, M.B., CH.B. LIVERP.,
LATE CAPTAIN, R.A.M.C. (T.F.)

THE case here recorded seems particularly interesting from the following facts: 1. That the keratosis was generalised and occurred on the trunk and limbs, and apparently in the mouth and round the coronal sulcus of the penis and anus. 2. That the clinical appearance of the lesions made a diagnosis of secondary syphilis combined with keratosis and gonorrhoeal arthritis justifiable.

The patient was admitted with an uncomplicated anterior urethritis. Incubation period six days. He reached hospital three days after the discharge appeared. Gonococci found; prostate normal in size and consistency. He was given anterior irrigations (at 8.30 A.M. and 5 P.M.) of 1/8000 pot. permang. increasing to 1/4000 after four days. Demulcent drinks, *ad lib.*; patient rested for first week. Progress was uneventful; two-glass urine test showed a clear second glass till tenth day. The discharge was then muco-purulent. On the eleventh day he complained of slight dysuria and frequency during night. The prostate was slightly swollen and tense; second glass of urine was turbid and contained some blood. Temperature 100.6° F. He was put to bed at once, a morphia and atropine suppository was given; hot rectal injections twice daily. Irrigation was stopped.

The next day there was slight pain in the right knee but no swelling. During the following week both knees and ankles became very painful and swollen, with definite fluctuation. Temperature 99° to 102°. No drugs eased the pain in the joints; temporary relief was obtained by repeated hot soda packs.

On the seventeenth day after the joint pains began some small moist papules were noticed round the anus and coronal sulcus of the penis, with very marked resemblance to condylomata. Lesions on the mucous membrane of the lips and cheeks, oval in outline and bluish-pink in colour, resembled mucous patches. No history or scar of a primary sore; urethroscopic examination showed no sore in urethra. History of frequent exposure to infection for the past three months. Major E. G. French (in charge of the syphilis division) agreed that the case resembled secondary syphilis but advised a dark-ground examination for spirochaetes from the lesions. This proved negative.

The next day some small nodular bullæ appeared on the soles of the feet and on the legs. They were quite isolated and when a few days old formed a corry mass, dark brown in colour. These masses were most marked on the dorsal aspect of the toes over the joints and on the plantar surface over the metatarso-phalangeal joints, but also occurred on the shins and thighs and over the abdomen and chest wall; a few on the arms and hands. The diagnosis of keratosis was obvious, but the lesions on the penis, anus, and in the mouth were still thought to be syphilitic. Wassermann blood test was +. Following a provocative dose of 0.6 g. novarseno-benzol (Billon) the Wassermann showed a clear negative. The diagnosis of syphilis was held in abeyance.

As nothing had seemed to influence the rheumatism I gave 2½ c.cm. intramine intramuscularly. There was a good deal of pain at the site of injection but the joint pains

were relieved. The following day I examined the prostate again; tenderness not so acute. I gave a gentle massage. Some pus was obtained and in the urine were many shreds of pus. The intramaine was repeated every four days for six doses, posterior irrigation with 1/8000 pot. permang. started, and every five days I massaged the prostate, which improved rapidly. At the end of a month the patient felt much better; the joints were almost normal; no evening rise of temperature. He was allowed up and walked on sticks for about half an hour daily. The prostatic massage was proceeded with for another 15 days. He could then walk well without a stick; no pain or swelling in the joints; lesions in the mouth, on penis, body, legs, and arms had disappeared; no urethral discharge. Irrigation was stopped, and three successive examinations of the urine for gonococci after prostatic massage proved negative. Wassermann was again negative.

In another week he was transferred to a convalescent depot and three weeks later was found fit for general service.

A CASE OF PELVIC SARCOMA

INVOLVING NERVES AND PRESENTING FEATURES
OBSCURING DIAGNOSIS.

BY J. HAMILTON HART, M.R.C.S., L.R.C.P. LOND.

THE following case, which showed some unusual characteristics obscuring diagnosis may be of interest.

The patient, a married woman, aged 49 years with no children, who had always been healthy, first consulted me in September, 1917. She then complained of pain in the lumbar region and the back of the right thigh. She was treated with salicylates and the pain improved. She again consulted me on Feb. 17th, 1918, for pain, mostly located in the front of the right thigh, of about two months' duration, and gradually getting worse, and accompanied by weakness of that leg. I found the right thigh muscles wasted, the thigh being one inch smaller than the left; there was distinct loss of power in flexing the thigh and great pain was caused by this movement in the region of the anterior crural nerve, but no definite tenderness was made out. Abdominally, a large tumour extending up from the pelvis a couple of inches above the umbilicus, and presenting the characteristics of a uterine fibroid, was found. No tenderness or pain was noticed at this examination.

Dr. J. S. Fairbairn saw the case with me on July 20th and confirmed my diagnosis of fibroids. Although the pain and illness of the patient could not be fully explained by the presence of the fibroid, he advised an operation, both with a view to the removal of the tumours, making certain of their nature, and to the complete exploration of the abdomen and pelvis. The patient was moved to a nursing home on July 24th, and it was then found that she had a temperature varying from normal in the morning to about 100° F. at night. Abdominal hysterectomy was performed on July 27th, the uterus and appendages, with the fibroids, weighing 7½ lb. Search was made for any sign of other growth in the abdomen and pelvis, but nothing was found. The abdomen was closed and healed by first intention; the patient stood the operation well.

After the operation the temperature rose to 100° in the mornings, to 102° at night, and the pain in the right thigh persisted.

On Sept. 15th slight swelling and tenderness over the right femoral vein was detected, with oedema and puffiness of leg and ankle. The patient, who had been improving in general condition, now commenced to flag.

On Sept. 24th she was seen by Dr. J. E. Knox, on my behalf, as I was away; he found her in a collapsed condition; temperature 101°; pulse 130, weak. The right iliac region was found to be occupied by a large fluctuating swelling, thought to be an abscess. Vaginal examination showed that the right side of the pelvis was filled by a soft swelling bulging inwards from the lateral pelvic wall. A second operation was performed by Dr. Fairbairn. An incision was made down into the swelling, which was found to be retroperitoneal arising out of the pelvis, consisting for the most part of a large hematoma in which were masses of soft jelly-like growth, bled freely on handling, and apparently arose from the lower and posterior part of the pelvis. The condition was recognised as a vascular sarcoma, and as there was free bleeding the cavity was plugged and closed. The patient died on Sept. 26th.

A portion of the growth was sent for microscopical examination with the following report: "This material is much altered by hæmorrhage and early necrosis, but we think it must be a soft, highly vascular sarcoma. It is composed of very uniform round cells with deeply staining nuclei in the scantiest of stromas. The blood-vessels are wide and thin walled. There is no evidence to show whence it originated."

Remarks.—This was a case of sarcoma apparently arising from the deep tissues of the pelvis and pressing on the nerve

roots, and after removal of the fibroids of very rapid growth. The unusual features are: the pain in the back and leg of some months' duration, and which was the cause of the patient seeking advice. Nerve pain and muscular wasting being, as a rule, a late symptom of malignant growths, it was unusual that the growth in this case was not able to be found at the time of the operation. In the examination the mass of fibroids was discovered, but being quite movable and not impacted in the pelvis were not considered sufficient to explain the nerve effect. The operation was done to exclude the possibility of the fibroids being the cause, and to make sure that the mass was not a malignant ovarian growth adherent to the uterus, and to explore the abdomen and pelvis for a possible cause.

The urinary condition was thought to be a possible explanation of the fever and pain, an infective pyelitis caused by pressure of an enlarged uterus, giving rise to obstruction of ureter, as occurs sometimes in the pyelitis of pregnancy. The femoral thrombosis was evidently caused by the invasion of the veins by the growth and was rapidly followed by the formation of a large hæmatoma, which arose as the result of leakage from the vein or breaking down of the growth, and which was at first thought might be an abscess.

The pyrexia, at first of slight degree and higher later on, tended to bear out an infective process, either pyelitis or cellulitis and pelvic abscess, although such pyrexia is sometimes met with in sarcoma. The soft, jelly-like nature of the growth and its probable origin in the deep structure of the pelvis probably explains why it was not detected until erosion of the vessel and formation of a hæmatoma.

In conclusion, I have to thank Dr. Fairbairn for his notes on the second operation, at which I was unfortunately unable to be present. The pathological reports are by the Clinical Research Association.

Hart Molesey.

TWO CASES OF

UNILATERAL HYDROTHORAX DUE TO DISEASE BELOW THE DIAPHRAGM.

BY W. GIFFORD NASH, F.R.C.S. ENG.,

SURGEON, BEDFORD COUNTY HOSPITAL.

THE two cases related in this note must be very unusual, as I cannot find any reference to a unilateral hydrothorax being produced by subdiaphragmatic disturbance. In the first case cure was effected by removal of the cause, and in the second recovery took place after numerous aspirations although the cause persisted.

CASE 1.—In 1906 Mr. H. C. Strover, of Sandy, Beds, asked me to see a woman, aged 45, who had a large ovarian cyst and pleural effusion. The abdomen was filled by an immense ovarian cyst. There was much dyspnoea due to the upward pressure of the cyst and effusion into the left pleural cavity. The patient was admitted into a nursing home, and on March 4th, 1906, I withdrew 85 oz. of clear fluid from the left pleura; 11th, 75 oz.; 18th, 65 oz.; 26th, 55 oz. It was evident that the pleural effusion would recur, so on March 28th I operated and removed a very large multilocular left ovarian cyst. The pleural effusion did not recur and the patient was quite well when seen in June, 1918.

CASE 2.—A patient, aged 50, a chronic alcoholic with an enormously enlarged liver and ascites, was found in April, 1917, to be suffering from effusion into the right pleural cavity. The following were the results of aspiration of the pleural cavity: April 20th, 60 oz.; May 16th, 80 oz.; June 26th, 60 oz.; July 31st, 100 oz.; August 28th, 70 oz.; Oct. 22nd, 85 oz.; Dec. 11th, 80 oz. Improvement then gradually set in, and it was not again necessary to aspirate the pleura, although the alcoholism and liver condition remained the same. There was never any left pleural effusion. When last examined in December, 1918, there was no trace of any pleural effusion, and the right lung was acting perfectly. The liver was much enlarged and nodular, and there was a moderate amount of ascites. The amount of whisky consumed was about a bottle a day, besides other alcoholic drinks.

In neither case was there any cardiac or renal disease, and no suspicion of tuberculosis. The effusion was a gradual one and free from any inflammatory symptoms. I can only conclude that pressure upwards of the diaphragm in some way led to the pleural effusion.

Bedford.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

Transfusion in Diseases of the Blood.

A MEETING of this section was held on Feb. 25th, Dr. G. NEWTON PITT being in the chair.

Dr. O. LEYTON read a paper on Transfusion in Diseases of the Blood. Although he had transferred more than 60 litres of blood from donors to recipients, he did not feel himself to be in a position to make any dogmatic statements as to the efficiency of transfusions in this regard. The main object of the paper, based on 100 transfusions which he had undertaken, was to record the method adopted and the results obtained.

His experience began seven years ago by the transference of blood from an erythraemic patient to one suffering from pernicious anaemia. A 20 c.cm. syringe was fitted with a three-way tap, to which were attached suitable rubber tubes and appropriate needles. The whole apparatus was washed out with liquid paraffin and drained. Blood was drawn from the erythraemic patient and directly injected into the vein of the anemic one. After 40 c.cm. had been injected the latter complained of severe cramp in his limbs and the transfusion was stopped. The symptoms subsided after about a quarter of an hour, and it was found that the red blood cells had increased from $1\frac{1}{2}$ to 2 millions per c.mm. In the absence of a knowledge of Moss's work on iso-agglutinins the symptoms were ascribed to obstruction of capillaries of the central nervous system by minute quantities of liquid paraffin. The patient felt so much better that he desired another transfusion. On this occasion care was taken to expel all excess of paraffin and a glass window was put in the tube close to needle to ensure that no air was injected. 80 c.cm. of transfused blood led to the same symptoms as before together with nausea, vomiting, and severe palpitation. The donor belonged to Group 2 whilst the patient was of either Group 4 or 3. No lasting benefit followed.

The Multiple Syringe Method.

Being desirous in the case of a patient with recurrent pernicious anaemia of carrying out a series of transfusions, he decided to use the multiple syringe method so as to avoid cutting or obliteration of veins. The patient, whose blood was of Group 4, was in *extremis*. There was no difficulty in transferring 200-300 c.cm. by this method, but the blood in the needle in the donor's vein then clotted, and a fresh needle had to be inserted into a fresh vein. To obtain 600 c.cm. the donor had to be pricked at least three times, and sometimes, when fright hastened the clotting, even four or five. Needles were therefore made with cannulae; if the blood in the cannula clotted, that cannula was withdrawn and a fresh one inserted. By this means an unlimited quantity of blood could be obtained by pricking the donor once. Needles and cannulae of various gauges were made. It was essential that the needle should be sharpened every time before use and wise for the operator to sharpen it himself. The cannula should project about 0.5 mm. beyond the point of the needle, and the end of the cannula should be rounded to prevent damage to the wall of the vein. The syringes were of 20 c.cm. capacity and had attached about 10 cm. of rubber tubing of about 1 c.cm. capacity. A nozzle attached the tubing to the mount of the needle. The syringes were coated with vaseline and washed out with liquid paraffin and the tubes were filled with a solution of sodium citrate (5 per cent.) and sodium chloride (0.45 per cent.) to prevent waste of blood and coagulation. The rubber tubing permitted slight movement of the syringe without damage being done to the vein. If the blood showed a tendency to clot the citrate solution was caused to mix with the blood by shaking the syringe slightly. The solution should be made with water sterilised immediately after distillation. Vessels containing sterile normal saline should be near the recipient and donor in case the rates of drawing and injecting blood failed to correspond, for the interval might be filled up by passing saline through the cannula, thereby preventing clotting in the vein.

The introduction of the needle was facilitated by distending the vein by applying a pneumatic armlet and compressing the air in it to the diastolic blood pressure of the donor or patient respectively. The arm should be kept warm until all was ready, and the pressure should not be released until the cannula had been passed through the needle.

Selection of Donor.

It was essential that the donor belonged to the same group as the recipient, as shown by related cases. He had heard of a fatality following the transfusion of blood from a donor taken at random, and even if donors of Group 4 only were utilised there must be the risk that the serum of the blood injected might haemolyse and damage the patient's red cells. Donors must be free from malaria, syphilis, and tuberculosis. He preferred a donor unacquainted with the patient, because frequent transfusions might be necessary, and the donor might falsely assert that he was feeling quite well in order to supply further blood to a relative or friend. If only one transfusion was anticipated there was no reason to avoid a relative as a donor.

The preparation of the donor consisted in reassuring him that he would feel no ill-effects, and that the amount of blood to be taken was less than half of that which he could lose without discomfort. He usually gave him a cup of coffee shortly before transfusion, and encouraged him to smoke during the operation. If the donor became frightened his blood clotted rapidly, and if faint the blood ceased to flow. A short interval, during which saline was injected, was required before proceeding. There were no after-effects. He favoured using the same donor frequently.

Preparation of the patient consisted of depriving him of all but the lightest food for six hours before transfusion. The occasional rigors and slight pyrexia were less frequent and less intense if a small dose of morphine and hyoscine was given half an hour before the operation.

Results and Conclusions.

One hundred transfusions were distributed very unevenly among ten patients, one having more than 50, whilst two had one each. The immediate effect was masked by the morphine and hyoscine. Afterwards the patient felt much less ill. When there had been haemorrhage from the bowel or uterus it ceased. The vomiting and nausea, sometimes accompanied by diarrhoea in extreme anaemia, were alleviated. The blood picture improved, the red cells being sometimes more than could be accounted for. Perhaps this was explained by polyuria, which was very noticeable during the first few hours after transfusion. The increased number of red cells might be maintained or might disappear during the next few days.

After relating cases, including some of pernicious anaemia, a case of myeloid leukaemia, and two cases of aplastic anaemia, which were treated in this way he drew the following conclusions: (1) In the majority of cases symptoms are alleviated by the transfusions; (2) in some a series of transfusions at short intervals leads to the blood becoming normal for a time; (3) perhaps in a small percentage life can be maintained indefinitely by supplying the blood at the same rate as it is destroyed; (4) in many cases the disease is progressive in spite of transfusions. The blood picture becomes worse and worse, and death is only postponed for a short time.

Discussion.

Mr. ALEXANDER FLEMING said that his experience was confined to transfusion of surgical cases accompanied by sepsis at the base in France. He had used the citrate method, transfusing from 600 to 1000 c.cm. into the recipient. There had been no untoward symptoms except in one case, when considerable distress was experienced after the injection of 100 c.cm. It was possibly explained by the transfusion being given too quickly, or by wrong classification of the donor. The surgical teaching was that the blood of donors of Group 4 could be given to anybody, since no sera agglutinated their corpuscles. He had always used members of this group. It was important to use a method where cutting down was unnecessary because it avoided needless discomfort to the donor and left no scar, which might afterwards erroneously suggest that salvarsan had been injected. The result of the transfusions had been to benefit the patients immediately. Nearly all had had a secondary haemorrhage. In them, after transfusion, the colour returned and they felt better, an improvement which persisted. An

attempt had been made to combat sepsis by utilising the blood of recovered cases, but there was no evidence that it had any advantage.

Dr. HELEN INGLEBY'S experience of transfusion in cases of pernicious anemia had been similar to that of Dr. Leyton. The most successful result was in a case of gastric ulcer with severe hæmorrhage, which was rapidly getting worse and seemed likely to end fatally. After the first transfusion a rigor and hæmoglobinuria occurred, but the general condition improved, and transfusion was employed on two subsequent occasions. The amount of blood she had transfused was small, varying from 100 to 10 c.cm. This raised the question whether small quantities were not as useful as large, and whether transfusion was not in part beneficial through stimulating the bone-marrow.

Dr. F. S. LANGMEAD spoke of transfusion for "the hæmorrhagic disease of the newly born," in which the procedure described by the reader of the paper was impracticable. The fact that in this disease the subcutaneous or intramuscular injection of small quantities of human serum or of human blood had very greatly improved the prognosis showed that in such cases, at any rate, the result obtained was attributable to something more than mere replacement of blood which had been lost.

Dr. NEWTON PITT said that it would be useful to determine which were the best methods and to correlate results obtained in different diseases. It was open to argument whether the transfusion of citrated blood in gastric ulcer might increase liability to hæmorrhage. In such cases horse serum alone was sometimes effective. He thought the introduction of the cannula was a great improvement on former technique.

Dr. LEYTON replied.

MEDICAL SOCIETY OF LONDON.

Congenital Stenosis of the Pylorus.

A MEETING of this society was held on Feb. 24th, Major A. F. VOMLOCKER, R.A.M.C. (T.), the President, being in the chair.

Mr. R. A. RAMSAY read a paper entitled "The Surgical Treatment of Congenital Pyloric Stenosis, with Special Reference to Rammstedt's Operation of Simple Incision." He held the view that the condition was a true hypertrophy and that operation offered the best prospect of recovery. Having described shortly the morbid anatomy of the condition, he showed that an operation, to be of value, must provide an efficient outlet from the stomach, the ideal method being a restoration of the natural lumen of the alimentary canal through the pylorus itself. If the continuity of the alimentary canal could be re-established the exhausting vomiting would cease and food would enter the intestine, the case becoming one of simple marasmus. There were, however, two causes of failure: (1) the extent of the wasting when treatment was undertaken, so that the patients were incapable of assimilating food, and were liable to severe or even fatal diarrhoea; the other the liability to death from shock, hitherto the chief cause of the high mortality in these operations.

Operative Measures.

The operation must be as short as possible, and to attain the desired speed the technique must be simple and involve the least possible suturing; whilst if the necessity for the control of hæmorrhage was done away with by avoiding vascular tissues and blood-vessels much valuable time could be saved. The abdominal viscera should be exposed and handled as little as possible, and all manipulations should be carried out with great gentleness. Rammstedt's operation of simple incision of the hypertrophied muscle fulfilled these conditions to a greater extent than the better-known procedures hitherto more usual.

Having discussed the operations of resection of the hypertrophied pylorus and gastro-enterostomy, Mr. Ramsay stated that the remaining operations fell into a group by themselves in that they all aimed at providing an efficient communication between the stomach and the duodenum by re-establishing the natural channel through the pyloric canal.

These were three in number: pyloroplasty with its modifications; dilatation, or rather divulsion, of the hypertrophied muscle; and simple incision of the constricting band. Each had an advantage in that the manipulations were limited to the pylorus and adjacent part of the stomach so that a smaller incision and less disturbance of the parts were required. He discussed pyloroplasty and its modifications introduced by Nicoll and Weber, and Loreta's operation, usually described as dilatation of the stricture but which actually included rupture of the constricting band. The latter would seem to be preferable to resection and to gastro-enterostomy in that there was less disturbance of parts since the pylorus and adjacent parts of the stomach were alone dealt with; there was less suturing and no hæmorrhage, so that the duration of the operation was shorter and the subsequent shock diminished. Compared with pyloroplasty, divulsion lacked the serious difficulty of technique met with in the former procedure in connexion with the folding and suturing of the thickened muscle. There was no distortion of the parts in divulsion, and if performed with care and deliberation very little force need be used.

Rammstedt's Operation.

Rammstedt's operation, in his opinion, had very definite advantages when compared with any of those he had already described. In it the hypertrophied muscle was incised from the peritoneal surface as far as the sub-mucous layer, the mucous membrane being left intact and the stomach not opened. The anatomical result to the pylorus was the same as when rupture of the constriction by dilators was carried out and depended upon the same details of morbid anatomy—namely, upon the tendency of the divided muscle to widen the incision by its contraction and upon the redundancy of the mucous membrane. Rammstedt's procedure had been extensively tried in the United States with good results. At Dr. Cantley's suggestion, he (the speaker) acquired the details of the technique, especially from two papers by W. A. Downes,* of New York, who gave a very clear and detailed description. He himself had performed it on three occasions. Mr. Ramsay then gave a detailed description of his method as follows:—

Previous to the operation subcutaneous infusion of saline is given and the limbs bandaged, measures which have in view the prevention of shock; immediately before the anæsthetic is started the stomach is washed out; in operations which entail an opening into the lumen of the stomach this is necessary to prevent soiling of the peritoneal cavity by the gastric contents, but it is of great assistance in Rammstedt's operation, since in the first place an empty stomach is easier to handle than a full one, and secondly the collected and stagnant food does not pass, when the obstruction is relieved, into the intestine, where it might help to set up the diarrhoea which is not uncommon, even without such an obvious exciting cause.

The question of the anæsthetic is of great importance in these cases. The patient is usually in an unfavourable condition for an abdominal operation or even for an anæsthetic; and yet to enable the operation to be rapid and satisfactory the temptation to keep the patient too lightly under must be resisted, otherwise there may be straining, especially at the moment of closing the abdominal wound, when much time may be lost if prolapse of the abdominal contents occurs. The choice of anæsthetic is made with a view to the counteraction of shock, for which reason open ether is probably the most suitable. In my cases this important part of the operation was in the hands of Mr. F. D. Bennett, who, on each occasion after commencing with chloroform, continued and finished with open ether, and I consider that the successful reduction of shock to a very slight degree was largely due to the careful and helpful manner in which he conducted the anæsthesia.

Description of Operation.

The patient having been anæsthetised the abdomen is opened by an incision 1 inch to 1½ inches in length made in the middle line from the tip of the ensiform cartilage vertically downwards. The advantages of this incision were demonstrated to me by Mr. Burghard who has found it particularly suited to cases of this nature on account of the relative speed and facility in closing it at the end of the operation. It is made in the middle line on account of the absence of blood-vessels, few and usually none being met with that require ligation. The possibility of post-operative hernia is negligible in the upper part of the abdominal wall in an infant, so that an incision guarded by muscle which

* Med. Klin., 1912, No. 42, p. 1702. Zeit. f. Chir., 1913, vol. xl., No. 1, p. 3.

* Journ. Amer. Med. Assoc., 1914, lxii., p. 2019. Surg., Gyn., and Obst., March, 1916, p. 251.

would require more time and involve measures for the control of bleeding is unnecessary. On opening the peritoneal cavity only the surface of the liver is exposed; by means of a finger hooked under its margin this organ is rotated upwards and the anterior wall of the stomach comes into view. The advantage of this manipulation is seen at the end of the operation, for when the pylorus is returned to the abdomen the liver drops back into its normal position, and so intervenes between the abdominal wound and the intestines and omentum, their tendency to prolapse being thus prevented much more effectually than by the use of any intestine guard or other instrument. This incision is well adapted to all the operations on the pylorus already described, and is always used by Mr. Burghard when performing division of the stricture.

The stomach having been exposed in the manner just described, its anterior wall is picked up with dissecting forceps and drawn out of the wound. By means of gentle traction on this part of the gastric wall the pylorus is brought up to and out of the abdominal incision, the rest of the stomach being returned to the peritoneal cavity. The diagnosis having now been confirmed, the pyloric swelling is held in the left hand and a longitudinal incision is made upon its anterior aspect; this incision should be placed midway between its upper and lower borders where the pyloric and right gastro-epiploic arteries respectively lie; branches of these are seen running transversely around the pylorus and between their terminal twigs is a non-vascular area through which the incision should pass. The incision is first made through the thickest part of the muscle, and should be extended towards the stomach where the transition to normal tissue is gradual; on proceeding to a greater depth, the mucous membrane is ultimately exposed at some part of the wound, and at once bulges between the edges of the divided muscle; with this as a guide the incision is carried to the same depth for the whole extent of the thickened band, the duodenal end of the stricture being divided last and with great care, since the sudden termination of the hypertrophy in this situation increases the risk of wounding the mucous membrane. While making the incision the fingers of the left hand draw the edges apart as one proceeds, so that the deepest part is always clearly seen and the mucous membrane easily identified as soon as it is exposed. The complete incision is from three-quarters of an inch to an inch in length, and its margins are separated to the extent of nearly half an inch by the retraction of the divided muscle fibres. Into the gap so formed a pouch of mucous membrane prolapses, filling it up and thus relieving the obstruction to the lumen of the pyloric canal. Little, if any, hæmorrhage occurs if the site of the incision is chosen as I have described it, but should a small vessel ooze, a hot sponge is usually sufficient for its control. The pylorus is now returned to the abdomen, the liver allowed to rotate into its normal position, and the wound in the abdominal wall sutured. Prolapse of intestine, or more especially of omentum, may delay this stage of the operation, but if the parietal incision has been made as already described and if the first sutures are inserted at the lower end of the wound where prolapse is most likely to occur, valuable time is saved, and as speed is such a great factor of success in these cases, I consider this an important detail of the technique.

On return to bed the usual measures are taken to combat shock, which although of a relatively slight degree is nevertheless always to be feared, lest its increase leads to a fatal result. Feeding is begun at once, with one drachm every quarter of an hour, increasing the quantity and interval rapidly till, at the end of 48 hours, 2 ounces every two hours are being given. The stools show that the passage of food from stomach to intestine occurs quickly, and therefore no delay in feeding is necessary.

The final result depended upon the degree of wasting present, and therefore the earlier the operation was done the more hope was there of success of the subsequent treatment by suitable feeding. Of Mr. Ramsay's three cases two had died, but in neither instance from the post-operative shock hitherto so frequent and fatal. All three recovered from the effects of the operation and gave evidence of the patency of the pylorus, death occurring in one case after six days from inability to assimilate and in the other after four and a half weeks from ileocolitis. With a rapid method of surgical intervention such as this, applied sufficiently early, he felt that the results of treatment in cases of this nature could be greatly improved, and he hoped that his paper would lead to a trial of Rammstedt's operation.

Discussion.

Mr. D'ARCY POWER agreed that pyloroplasty and Loret's operation were much too long and complicated, and he had given them up in the case of young children. It was clear that the earlier the operation was done the better for success.

Given the opportunity, he should try the operation just described. It was important that some agreement should be arrived at as to the optimum time for surgical treatment.

Mr. H. TYRRELL GRAY said that it was difficult to decide when to operate. He had performed Rammstedt's operation in from 15 to 20 cases, and agreed that it was the best surgical procedure. All his first four cases recovered. After a phase of disappointing results they were now much better again and were improving. Loret's was essentially an operation for early cases, but Rammstedt's had the advantage of being equally suitable later. Results would depend upon the time of the operation and the after treatment. The time occupied over the operation was not in itself sufficient to account for its advantage.

Dr. E. CAUTLEY had suggested the operations and watched them being performed by Mr. Ramsay, and agreed that the results were good. The procedure was rapid, produced slight disturbance, and procured a wide pyloric canal. Cases met with in private practice were seen earlier and did much better. This was partly due possibly to better conditions, but the main advantage was that an operation could be done earlier. He thought that it should be done as soon as a clear diagnosis was made. He was not satisfied with a diagnosis of hypertrophic stenosis of the pylorus unless a tumour could be felt or the symptoms were very characteristic. Cases of so-called recovery under medical treatment alone were not generally, in his opinion, genuine cases. Many of them were examples of mucous catarrh of the stomach. When the hypertrophy was sufficient to cause obstruction he was more than doubtful of recovery under medical treatment. With Rammstedt's operation he was inclined to resort to surgical treatment even when the diagnosis was less definite, as no serious harm resulted. The after-treatment was in no sense special, but that suitable for an ordinary infant of corresponding age and condition.

Dr. F. S. LANGMEAD took the view that recovery by medical treatment alone was by no means uncommon, and was all that was necessary in the less severe cases. He had frequently seen undoubted cases in which a pyloric tumour was distinctly palpable regain good health without operation. In almost every case in which, with the usual history, gastric peristalsis was characteristic and well defined, a tumour could be felt sooner or later. He disagreed, however, with those who deferred operation until too late or opposed surgical treatment in these cases. If an infant of 2 to 3 months old when first seen weighed only 6-7 lb., it was a case for operation without delay. If, on the other hand, the baby's condition was fairly good medical treatment could be tried and might prove quite effective. If after one to two weeks' trial the weight was stationary or declining operation should be no longer deferred. The need for operation might also become indicated by the degree of vomiting and the small amount of the stools. In breast-fed infants he had found that restricting the feeding to 5 minutes at hourly intervals sometimes led to prompt improvement. The breast should be emptied after every third feed with a breast-pump. Gastric lavage once or twice a day according to the amount of mucus and residue was the only medical treatment beyond dietetic of any definite value. For artificially fed infants he preferred small, frequent feeds of peptonised milk.

The PRESIDENT had had under his care 33 cases of the condition, and had analysed them carefully. The analyses did not indicate what were the causes of death or what determined the degree of wasting. The mortality had been 60 per cent., and no case had been treated surgically. He had hesitated to advise operation, for he could never assure himself that the obstruction at the pylorus was the cause of the wasting. The prognosis depended very much on when the patients came for treatment. Weight was an important factor in prognosis. He had not found that one variety of food suited better than others. Until he was confronted with better figures for operative treatment than those attained by medical measures he would not change his opinion to one favouring the former.

A MEETING of the West London Medico-Chirurgical Society will be held to-night (Friday), at 8.30 P.M., in the society's rooms, West London Hospital, when a paper will be read by Dr. F. G. Crookshank, entitled "The Importance of Symptoms."

Reviews and Notices of Books.

Crime and Criminals: Being the Jurisprudence of Crime—Medical, Biological, and Psychological. By CHARLES MERCIER, M.D., F.R.C.P., F.R.C.S. With an Introduction by Sir BRYAN DONKIN, M.A., M.D. Oxon., F.R.O.P., Member of the Board of Directors of Convict Prisons; late one of H.M.'s Commissioners of Prisons. London: University of London Press, Ltd. 1918. Pp. 292. 10s. 6d.

ACCORDING to Austin, "the matter of the science of jurisprudence is law, strictly so-called," a definition which need not prevent a writer on jurisprudence from including in a treatise upon crime and criminals the consideration of conduct not punishable under the criminal law, but which he would wish to see so punished. Dr. Mercier claims in an early chapter more than a licence or qualification to instruct the Legislature as to what acts and omissions ought to be punished and what ought not, declaring that "a jurist would neglect his duty, a book on jurisprudence would lack its most important factor, if this instruction were not imparted," for to him, not unreasonably, jurisprudence is "the science of law which discusses not only what the law is, but also what it ought to be." He accordingly turns to first principles to discover the foundation upon which the law rests, and to determine in what directions it may be improved. It does not follow, however, that the Legislature, or, indeed, the reader will be brought to the same conclusions as Dr. Mercier, by studying his chapters on the nature of crime, on kinds of crime, on private and racial offences, and on criminals. Every reader must find these chapters of interest, together with those on the prevention, detection, and punishment of crime, even though he may not accept all the views to which the writer gives the weight of his approval, or of which he claims to be the originator, but Dr. Mercier is a learned, stimulating and amusing writer. One of the most convincing chapters is that in which a comparison is drawn by Dr. Mercier between his own doctrine of the causation of insanity as due in varying proportions to the two factors of heredity and stress, and the proposition, equally his own, that crime is due to "temptation or opportunity, the environmental factor or stress, acting upon the predisposition of the offender, the inherent or constitutional factor." "The more potent the one factor the less of the other will be needed to bring about the result," he says, and he works out the thesis in an eminently clear and readable manner.

If it be a legislator, however, or, shall we say, an average Member of Parliament, whom we imagine as turning to Dr. Mercier's work, with a view to bringing in a Bill for the amendment of the criminal law, we picture him as a little disappointed by the nature of the advice given, as the result of psychological analysis of the criminal and his crimes. Sir Bryan Donkin, in an appreciative preface, prepares us for what we venture to regard as the principal recommendation which Dr. Mercier desires to make, and one of more importance than the suggestion to treat as larceny the "stealing of the use of a thing." "Dr. Mercier," writes Sir Bryan Donkin, "considers that breach of contract and false imprisonment also should be crimes: and he seems to have reason on his side." On pages 172 and 175 will be found the author's statement of his opinions, or rather his assertion that breach of contract "undoubtedly" ought to be a criminal offence, and that "the exclusion of false imprisonment and breach of contract from criminal offences is a blemish in English jurisprudence." This will be rather startling to those who deprecate the tendency of modern legislation to increase the number of acts in respect of which proceedings in criminal courts may be taken. It may also strike them from a merely practical point of view that the criminal docks of the country would not be able to contain the persons charged with this new vast class of offences, while the Bar would be seriously depleted by the appointment of the necessary number of stipendiary magistrates. Breach of contract may satisfy every definition of crime. Dr. Mercier says it does. It may also be injurious to society; but even this does not prove, nor does he, that it is, in fact, desirable to treat what has hitherto been regarded as a matter concerning the two parties to the contract, as an offence against the State. Why, also, it may be asked,

should breaches of contract among civil causes of action be rendered crimes, and not torts as well; or, rather, why of all torts should false imprisonment alone be selected? This cannot be in order to diminish the number of trivial prosecutions that would certainly follow if breaches of contract were made criminal, for in that case malicious prosecution would have been included with false imprisonment. However, we can express entire agreement with the opinion, also to be found on p. 172, that the criminalising of wrong acts now remediable only by civil proceedings is not likely to be resumed, though whether this is due to a lack of logical completeness and systematic order, inherent in English law and the English character, is more doubtful.

Dr. Mercier is given to statements of a character which challenges contradiction. He devotes many of his observations to the expression of contemptuous dissent from the doctrines of Lombroso and his school, but gives no references to the works of Lombroso such as would prove that a particular criticism is deserved. For example, at p. 38, he refers to the prevalence of smuggling at one time among the inhabitants of our coasts. These, he points out, became criminals under the then existing laws, and he describes the physical characteristics which, "if the doctrines of Lombroso, Garofalo, and the rest of the continental criminologists are true," they ought to have developed. "But did they?" he asks triumphantly—a "num" question, as the Latin grammar would have it. Well, first, the rejoinder might be made, "Did Lombroso and the others, in writing of criminals, define them in such a way as inevitably to include the early nineteenth century smugglers of our southern counties?" And secondly, the inference which he would have us draw is not justified by the writings alluded to—at least, in our opinion.

Dr. Mercier has written an able, useful, and original book, which has deservedly earned for him, and for the second time in succession, the Swiney Prize. His teaching gains by his clearness and well-justified self-assurance, but its acceptance is sometimes rendered unpalatable by his methods of demonstration.

Report of the Work of the Invalided Soldiers' Commission, Canada. May, 1918.

THE experiment of giving to the Army Medical Corps the medical work in the hospitals and institutions of the Commission charged with the care of discharged soldiers was found to be unworkable, and since the early part of 1918 these men have been placed under the direction and control of the Minister of Soldiers' Civil Re-establishment. The Commission, in addition to caring for all officers and soldiers suffering from diseases either incurable or likely to be of long duration, such as tuberculosis, epilepsy, paralysis, and mental disorders or relapses of their former complaint, retains the control of vocational training in the hospitals before the men are discharged and of subsequent re-education. The Commission will develop the vocational branch, establish a distinct medical service of its own, and will arrange to secure closer co-operation with the various Provincial Commissions charged with the duty of finding employment for returned men. The total number of hospital beds retained by the Commission is 5575. A novel feature is the employment of dietitians; three organising dietitians have been appointed and dietitians have been placed at a number of the Commission's hospitals; ladies who have taken University courses and have specialised in this subject are employed. They furnish detailed returns as to the consumption of the various articles of food; in this way a check is maintained on the quantity of food consumed and the supply of the correct amount of fat and other essentials to curative diet ensured. At all the larger institutions a recreation building has been provided; the main hall is equipped with a stage and a kinematograph, the lower floor being given over to classrooms, workshops, and bowling alleys. One permanent home with accommodation for 50 disabled men has been established at Toronto.

A factory for the manufacture of artificial limbs is maintained by the Commission. The artificial legs are made of wood obtained from the brittle willow and golden osier; the wood is cut into bolts about 22 inches long and bored through the centre in order to season without "checking." The bark is removed and the ends painted; the bolts are then left to season in the shade in the open air for two years. After this they are kiln-dried and kept absolutely dry till made up

into an artificial limb. At present the Commission issues an artificial arm with a working hook capable of holding a knife, fork, or pen, and with which a man can pick up articles and dress himself. The hook can be exchanged for a gloved hand with a movable thumb which enables the man to hold an umbrella or valise or carry his coat on his arm. Splints, braces, orthopædic shoes, and other orthopædic apparatus are made at the factory. Several returned soldiers are being taught various branches of the making of artificial limbs and orthopædic shoes. Men who have incurred disabilities on service which require appliances, such as orthopædic shoes, trusses, spectacles, rubber bandages and belts, are granted an annual credit for renewals.

Reference is made to the difficulty of diagnosing epilepsy. Convulsions, apparently typically epileptiform, are often found to be due to other conditions than epilepsy, the most frequent of these being hysteria. "Those cases developing seizures following exposure at the front, but without a previous history of epilepsy, and in which, on being invalided home, the seizures tend to diminish, should be regarded with great suspicion." A number of feeble-minded were enlisted. Certain of the higher grade defectives who had been able to carry on the simpler forms of manual labour, including farm work, proved totally incapable of carrying on in the Army. The writer of the report points out that the war has resulted in the medical examination and supervision of a large proportion of the male population, and has furnished information concerning a considerable number of defectives. Use should be made of this and definite after-care plans formulated for at least two well-defined groups of ex-soldiers, epileptics and feeble-minded.

Surgical Aspects of Typhoid and Paratyphoid Fevers. Founded on the Hunterian Lecture for 1917, amplified and revised. By A. E. WEBB-JOHNSON, F.R.C.S., D.S.O., Temporary Colonel, A.M.S. With Foreword by Lieutenant-General T. H. GOODWIN, O.B., C.M.G., D.S.O., Director-General, A.M.S. London: Henry Frowde, Oxford University Press; Hodder and Stoughton. 1919. Pp. 190. 10s. 6d.

THIS volume is an amplified account of the surgical aspects of typhoid and paratyphoid, which formed the subject of a Hunterian lecture published in our columns on Dec. 1st, 1917. Numerous illustrations, both black-and-white and coloured, embellish the text, and the book can be confidently recommended as a trustworthy guide to a new and interesting subject.

Diseases of the Heart and Aorta. By Dr. A. D. HIRSCHFELDER. Third edition, revised. London: J. B. Lippincott Co. 1918. Pp. 732. 30s.

IN the preface to the first edition the author says that his aim has been "to present side by side the phenomena observed at the bedside and the facts learned in the laboratory in order to show how each supplements the other in teaching us how to observe the patient and to direct the treatment." This principle has been elaborated throughout the book, and in this third edition Dr. Hirschfelder has faithfully correlated the fruits of recent research with the clinical facts upon which they bear. The result is a volume in which the reader in search of light on problems of the pathological physiology of the circulation may be sure of finding help. It is an industrious and exhaustive compilation, and one which will be welcome to everyone interested in the study of cardiology. The student of clinical medicine, however, will find that the facts are presented more from the viewpoint of the laboratory than from that of the bedside. Under such circumstances it is not surprising that a large proportion of the writers quoted are Teutonic. Dr. Hirschfelder has indeed done his best to include the researches of America and Britain, but it is a little disappointing to find no reference to the work of Thomas Lewis and his colleagues in the chapters which discuss the military heart.

A striking feature of the book is the wealth of diagrammatic illustrations. Many of these are of the utmost value, and express in a lucid form that application of physiology to medicine which is the dominant purpose of the author. Dr. Hirschfelder is to be congratulated on the success of his book. If in his next edition he were to secure the collaboration of a clinician, he might give us the best account of cardiac disease in the English language.

Pye's Surgical Handicraft. Edited and largely rewritten by W. H. CLAYTON-GREENE, F.R.C.S. Eighth edition, fully revised, with some additional matter and illustrations. Bristol: John Wright and Sons, Ltd. 1919. Pp. 640. 21s. net.

A NEW and revised eighth edition of this useful manual has just been published. The author has taken advantage of the work of Sir Robert Jones in the section dealing with orthopædic cases. In this and other sections the letterpress is full of information invaluable to the student, the house surgeon, and the general practitioner. The book is exceedingly well got up; the illustrations are clear and helpful.

A Medical Field Service Book. By O. MAX PAGE, M.S. Lond., F.R.C.S. Eng. With a Foreword by Sir GEORGE MAKINS, G.C.M.G., C.B. London: Henry Frowde, Hodder and Stoughton. 1919. Pp. 160. 6s.

THIS is a very useful vade mecum for a medical officer in the field, dealing as it does with cases of disease and wounds prior to the entrance to the casualty clearing station. Similar text-books have been peculiarly conspicuous by their absence. The book emphasises the wide sphere of knowledge required by a medical officer in a forward area, and in giving samples of the information needed the author has produced a useful volume. He has quite rightly dealt with minor ailments met with in the line and the method of their treatment, and has not overburdened the reader with the more elaborate methods of dealing with wounds, the principles of treating which are much the same in every zone of activity. The book is a valuable addition to war literature.

A Treatise on Clinical Medicine. By WILLIAM HANNA THOMSON, M.D. Second edition. London and Philadelphia: W. B. Saunders Company. 1918. Pp. 678. 24s. net.

IN the second edition of this large work Dr. Thomson lays particular stress on the application of different kinds of rays in the diagnosis and treatment of carcinoma and sarcoma. Another special feature is the classification of diseases adopted by the author. Under the heading, "Infections Communicable by Intermediate Carriers," are included (together with typhoid and Asiatic cholera) pneumonia, tonsillitis, chorea, cerebro-spinal meningitis, beri-beri, and meat poisoning. This is the arrangement of a zealot or a prophet, and the reader is driven to the former assumption on finding scurvy, infantile scurvy, and cyanosis classed under Diseases of the Blood, "hiccup" under Diseases of the Respiratory Apparatus, dysentery under Intestinal Disorders. And the surprises could be indefinitely prolonged. The book is designed with the object of "serving the physician while he is actively engaged in the performance of his professional duties," but little space has been given to the pathology of the various conditions, without a sound knowledge of which the significance of the important symptoms, upon which such stress is laid, cannot well be appreciated. Some trained observation and some original ideas are to be found in the book, but it is not one for the practising physician to read without discrimination.

Diabetes and its Dietetic Treatment. By B. D. BASU, Major, I.M.S. (retired). Ninth edition, revised and enlarged. Allahabad: The Panini Office, Bhuvaneshvari Ashram. 1918. Pp. 104. Rs. 1.8.

A NEW edition of this little book has lately appeared, the ninth since 1909. In it the author develops his view that diabetes is, in a large proportion of cases, caused by alimentary toxæmia produced by (1) errors in diet; (2) disordered conditions of the digestive juices; and (3) toxins discharged by the bacteria in the alimentary canal. He regards the increase in the incidence of diabetes among the people of India as due to factors such as the increased export of wheat from India to the United Kingdom, and consequent dependence of the people of India on inferior food grains for their bread; the importation into India of potatoes; tea drinking; the nervous strain connected with modern life, which is a well-known cause of disordered digestion. With regard to the last-named he writes suggestively:—

"India is a country where, from time immemorial, people were accustomed to take their principal meal in the middle of the day, after which they used to spend an hour

or two in *siesta*, which allowed for the proper digestion of food. Under the altered conditions of their existence they do not find time properly to chew and masticate their food, which they are obliged to bolt down as soon as they can, to attend to the studies or business in the middle of the day."

The *Tribune* (India) suggests in this connexion that "it might be worth while to make a change, at least experimentally, in the office hours, restoring the time-honoured mid-day meals at leisure," stomach disorders being practically unknown among people not used to modern office hours of business and hurried meals. Among the various forms of treatment which the author has found useful are the exclusion of meat from the dietary; starvation and purgatives; gastric lavage; banana flour; unpolished rice, from which the water has not been strained; green vegetables. One outstanding idea running through all the methods of treatment is the urgent need for foods rich in vitamins.

Reports and Analytical Records

FROM

THE LANCET LABORATORY.

ANIODOL.

(THE ANGLO-FRENCH DRUG CO., LTD., GAMAGE BUILDING, HOLBORN, LONDON, E.C.1.)

ANIODOL is stated to consist of a stable combination of tri-methanal with allyl sulphocyanide in a solution of specially distilled glycerine. Such a compound, we find, is described in Thorpe's "Dictionary of Applied Chemistry" as the subject of a French patent in use as an antiseptic. According to our examination aniodol is a clear colourless fluid miscible with water in all proportions, which gives off a pungent gas on boiling. Tri-oxy-methylene (tri-methanal), as is well known, is a polymer of formaldehyde, and exhibits powerful germicidal properties. Associated with allyl sulphocyanide these properties are increased in aniodol. The liquid is a strong reducing agent, and the presence of the sulphur group was proved in our examination by the formation of black lead sulphide on heating aniodol with lead acetate and caustic soda. Its germicidal efficiency, according to particulars furnished, is remarkable, varying with the organism tested, the carbolic acid coefficient ranging from 25 as a maximum in the case of *Bacillus typhosus* to a minimum of 1 in the case of cholera vibrio. Aniodol may be used both externally and internally, the dilution being non-toxic, while organic matter does not appear to impair its germicidal efficiency. We have also examined aniodol powder, which contains the same antiseptic combination, starch, according to our findings, being used as an absorbent. It is practically odourless and is suggested as an efficient substitute for iodoform and similar applications.

- (1) DIGALEN; (2) OMNOPON; (3) SEDOBROL;
(4) THIOCOL.

(THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD., BASEL;
AND 7 AND 8, IDOL-LANE, LONDON, E.C.3.)

These preparations are well known, and were noticed in these columns some years ago. Certain changes in form and advances have been made, however, which may briefly be recorded in view of our examination of specimens recently submitted to us.

(1) Digalen was prepared from digitalis with the view of securing uniformity of pharmacological action of this most important drug. It thus represents the active principle of digitalis with all inert matter completely removed. Digalen is supplied in the form of a sterile, colourless standard solution of amorphous digitoxin upon which the therapeutic action of digitalis depends. There are also available tablets and ampoules containing standard amounts of this active principle.

(2) Omnopon contains the soluble hydrochlorides of the total alkaloids of opium in the proportion present in the drug itself, the principal alkaloid, morphia, occurring in each dose to the extent of about 50 per cent. Apart from its ordinary administration as an opium derivative free from unpleasant after-effects, its employment in combined anaesthesia is well spoken of. Omnopon is also supplied with scopalamine, a combination approved by some anaesthetists.

(3) Sedobrol is the outcome of a novel suggestion to combine a sedative with a nutrient. It occurs in tablet form containing sodium bromide, with chiefly soluble proteins of vegetable origin and fat. It makes a palatable cup, with saline taste, and may prove an acceptable means of administering a sedative and nutrient to the patient under, of course, the guidance of the physician. It is, in short, a bromide bouillon; it is said to be useful in insomnia, and this action may be expected.

(4) Thiocol is a soluble guaiacol derivative (potassium-guaiacol sulphonate) which has been employed in pulmonary affections and as an intestinal antiseptic. It is a non-toxic germicide. The tablets submitted gave a characteristic reaction with perchloride of iron, a deep violet colouration resulting.

- (1) SOLUTION POT. IODIDE (SOUFFRON);
(2) STROPHANTHUS AND STROPHANTHINE
(CRISTALLISÉE).

(MODERN PHARMACEUTICALS, 48, MORTIMER-STREET, LONDON, W.1.)

(1) Importance is attached to the employment of chemically pure iodides in medicine, and this preparation is simply a distilled water solution of pure iodide of potassium, the salt occurring, according to our analysis, to the extent of about 7 per cent. *w/v*. We found it to be entirely free from the common impurities of the iodide, while it proved stable.

(2) The use of strophanthus as a cardiac tonic has been discredited in some quarters, which, according to the French chemist, M. Catillon, is due to the fact that the usual tinctures have shown considerable variations in regard to the amount of the active constituent, strophanthin, present. This drawback has been overcome by the preparation of a standardised extract of strophanthus in granule form, each containing 1 mg. of the extract with the diuretic principle. In addition, we have examined granules containing strophanthin in crystalline form (1/10 mg.), the diuretic principle in this case being excluded. French authorities and clinical records are quoted showing the reliability of these preparations.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THIS Fund was officially closed by the Executive Committee at their meeting on Jan. 30th, the formal date of closure being Feb. 10th. Since the date of the meeting the following subscriptions have been received:—

| | £ s. d. | | £ s. d. |
|--|---------|---|---------|
| Hampshire Pharmacists' Association (per Mr. C. H. Baker, making 256 5s.) | 6 5 0 | South Australian Belgian Relief Fund (per the Agent-General for S.A.) | 500 0 0 |
| Dr. Charlotte E. Warner | 1 0 0 | J. M. ... | 0 10 0 |
| Dr. Alfred Cox (monthly) | 1 1 0 | Mr. D'Arcy Power | 2 10 0 |
| Dr. Papillon | 0 10 6 | Mr. H. B. Morris | 0 6 0 |
| Dr. Leak | 1 1 0 | | |

The following monthly subscriptions were received for January and also for February:—

| | £ s. d. | | £ s. d. |
|----------------------------------|---------|--------------------|---------|
| Dr. H. C. Morland | 0 10 6 | Dr. T. L. Draper | 0 10 0 |
| Major E. E. Fothergill, R.A.M.C. | 0 10 0 | Dr. F. W. Goodbody | 1 0 0 |
| Dr. J. C. Munson | 0 10 0 | Dr. A. Graham | 1 1 0 |
| Dr. G. Grey Turner | 1 1 0 | Dr. W. Stewart | 0 10 0 |
| Dr. A. W. Forrest | 1 0 0 | Dr. H. Whitehouse | 0 10 0 |
| Sir Thos. Barlow | 0 10 0 | Dr. Vincent Tighe | 0 10 0 |
| Dr. A. H. Naish | 0 10 0 | Dr. W. E. Goud | 0 10 0 |
| Dr. A. B. Stevens | 1 0 0 | Dr. H. Oalger | 0 10 6 |
| Dr. Luffman | 0 10 0 | Dr. Hyla Groves | 0 10 0 |

It will be seen that the Fund benefits by generous monthly subscriptions for January and February, and has also received from the South Australian Belgian Relief Fund, through the Agent-General for South Australia, a munificent donation of £500. In view of the terms of the letter published on Feb. 8th from Dr. V. Pechère the Fund was closed, but these handsome augmentations are none the less extremely gratifying to the Executive Committee who know full well in how many directions the money can still be splendidly used. Dr. Pechère, as President of the Comité National de Secours et d'Alimentation (Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés), called our attention, when deprecating the sending of further subscriptions, to the fact that his society had throughout practised the severest economy in order to keep funds in reserve, inasmuch as grave necessity would continue for some time. The Fund will still be able to do a little more to decrease the toll of misery.

THE LANCET.

LONDON: SATURDAY, MARCH 8, 1919.

Dental Practice, Qualified and Unqualified.

THE Report of the Departmental Committee appointed to inquire into the extent and gravity of the evils of dental practice by persons not qualified under the Dentists Act contains recommendations which directly concern members of the medical and dental professions, and which no doubt are being closely scrutinised and criticised by them. Beyond this the report as a whole should be of considerable interest to all intelligent members of the general public; it is a pity that only a small number of them, however, may be expected to read a Departmental Report. The Committee has to some extent gone outside the terms of its reference. It has not confined itself to consideration of the present inadequate supply of qualified dentists and dental surgeons, of the expediency of prohibiting the practice of dentistry by the unqualified, and of the practicability of modifying the amount of study, time, and money now expended in qualifying for a dental career. The Committee has dealt with these subjects more or less exhaustively, and they must certainly have afforded it ample material for reflection and deliberation. It has, however, also included in its survey and in its report the question of dental disease in relation to the health of the people, having realised, as it tells us, that it would be unable to report upon its reference until it had taken evidence of the effect of dental disease upon the general health, and of the incidence of such disease at different periods of life. The consideration of these points the Committee deemed necessary in order to form an opinion upon the number and kind of dentists likely to be required in the future; and often as such proclamations have been made of recent times, we welcome the public insistence by the Committee on the fact that the care of the teeth is an essential element in the care of the health, whether of the public or of the individual. Clearly the number of qualified practitioners now devoting themselves to the practice of dentistry is not sufficient to meet the demand for their services which exists, and which ought to exist in greater degree as the public comes to regard the care of the teeth as essential to the preservation of health. We endorse warmly the Committee's recommendation that a thorough research investigation into the causes and effect on health of dental caries is needed, and pass to the measures advised for improving dental treatment for the nation which seem likely to be dealt with by the legislature in the near future.

These proposals are due to the conviction of the Committee that quack dentistry offers a profitable livelihood to any person who has the physical capacity necessary to enable him to pull out a tooth, and the commercial ability to manufacture and to sell dentures of any sort, making known his trade by specious advertisements and unscrupulous canvassing. It has been proved before them by evidence

that unqualified dental practice is a source of many and dangerous injuries to members of the humbler classes of society—it is too often a form of robbery to which they fall victims with singular facility—while at the same time the universal practice of dentistry by the unqualified lowers the social status and public esteem of the dental profession, and by rendering it unattractive contributes to the shortage of qualified dentists. The carefully considered epitome of the evidence contained in the Report forms an explanation of the two most immediately important proposals of the Committee—namely, that unregistered practitioners should be forbidden to practise dentistry, and that in a new Register, in deference to their vested interests, there should be included unqualified persons who otherwise would be deprived of their means of livelihood. The unqualified have, of course, hitherto been able to practise as long as they did not describe themselves as dentists or use titles implying registration. As distinguished from individuals, the Committee has had to consider the case of dental companies with which it finds gross abuses have been associated, involving both malpraxis and fraud. As to these the recommendation is that dental companies shall not be prohibited from practising dentistry, but shall be controlled, all the operating and managing staff being required to be registered dentists, and special provision is being made to meet the case of existing companies, which will not be allowed to carry on any other business. The proposal to prohibit all practice of dentistry except by registered practitioners hardly requires argument to enforce it, and a few of the facts connected with unqualified practice noted in the Committee's Report should convince any but the most fanatical and unreasonable denouncer of so-called "monopolies." The reason for creating the monopoly in this case is the protection of members of the public, their persons and their pockets, and it may be mentioned that the establishment of a Public Dental Service is not the least interesting and important of the suggestions of the Committee, which had before it considerable evidence as to the uneven distribution of dentists in the countries of the United Kingdom and in different parts of each country.

The forming of the new Register and its enlargement by the admission to it of unqualified persons and by shortening and cheapening the process of qualification are grave matters, upon which there will be much to be said and on which opinions will be strongly divided. The Committee sums up the principle upon which it wishes to see the admission of the unqualified take place by advising that a reasonable measure of precaution shall be adopted to ensure that any person whose name is added to the Register was in *bond fide* dental practice before the date of this report, that this practice formed the means of his livelihood, and that he can be trusted safely to practise dentistry upon the public. It is not likely to be easy to set up and maintain consistently throughout the country a standard of *bond fide* dental practice, or to ascertain how far a candidate for registration can be trusted safely to practise. He will not be likely to have the capacity and skill of a practitioner registered after due training and examination, and the lowering of the general standard of registered practice will follow automatically. It is not proposed by the Committee

that the unqualified candidate for registration shall be examined, as it is of the opinion that there would be considerable difficulty in conducting such examinations; and it holds that any unregistered practitioner or dental assistant, who has been engaged continuously in the practice of dentistry by performing dental operations within the month for the period of five years immediately before the date of the Report, should be entitled to registration; for those of less than five years' standing an examination within a period of two years is suggested. With regard to the admission of unregistered persons who have been working in the manner defined above for five years the Committee admits that "possibly a number of not very competent practitioners may obtain registration," but apart from the difficulty of examination, which it foresees, it is of opinion that five years' professional work, combined with a satisfactory character, constitutes a vested interest which must be respected. We would suggest with regard to this that the consideration of vested interests may be carried too far in connexion with the unexamined, seeing that every privilege extended to this class is detrimental to the vested interests of the duly qualified dental practitioner. If the admission without examination, and more or less as a matter of course, of those who have acquired a vested interest by unqualified practice is to be combined with the registration of future candidates qualified by training less thorough than that of their predecessors, a general lowering of the standard will be the inevitable result; and here the advisability might be considered of making some difference in title between those who are on the Register by examination, and those who are admitted there in recognition of a good professional character of five years' duration. The ideal proposed by the advanced and scientific dental surgeons has always been that the dentist should be a qualified medical man practising dentistry as a specialty, just as the ophthalmologist practises his specialty, and this ideal has been advocated not in the interest of the practitioner, but of the public. It may not be one possible of attainment to-day, but it should not be allowed to drop out of sight. It may be beyond the reach of those now unregistered practitioners who are recommended for admission to the Register without any dental diploma whatever, but every facility should be afforded to all dentists for study after registration, and there should be every inducement for them to undertake such study. The proposal to establish a Dental Service may enable such inducements to be offered, if all posts in it are reserved for those whose qualifications are of the higher order; and qualified medical practitioners may be induced to specialise in dentistry with the prospect of combining with public service the building up of a private dental practice. In any case the Dental Service should bring within the reach of the working classes treatment such as in many districts has been out of their reach hitherto, except as a matter of charity.

The Influenza Pandemic.

LAST week at a north country petty sessions it was stated that of 140 persons attending a local dance 122 shortly fell victims to influenza in acute form and 12 died. The recrudescence of influenza in many parts of the country raises public health problems such as this, and continues

to be a matter of grave concern to sanitary authorities and their officials. A great deal of work is being done by medical officers of health with the view of limiting, so far as possible, the spread of the disease, but our imperfect knowledge of the epidemiology of influenza makes it difficult to reach satisfactory conclusions on the value of the many preventive measures suggested. We may well hope that the investigation of a filter-passing virus initiated by the late Major H. GRAEME GIBSON may soon lead to more accurate knowledge of the morbid agent. Short of this the position is well set forth in the Memorandum recently issued by the Local Government Board to which reference was made in a leading article in THE LANCET of March 1st. Two well-marked waves of influenza have swept over the country in the past few months and we are now in the midst of a third. Opportunity is thus afforded for study of certain characteristics of the malady which are still obscure. The most important of these is the question of immunity. It is important to ascertain, for example, whether one attack confers immunity against subsequent attacks, and, if so, how long this acquired immunity may be expected to last. Many observers affirm that those persons who suffered from influenza in June and July of last year escaped during the subsequent autumn epidemic, or, if they were attacked, it was only in a modified and very mild form; this they attribute to immunity acquired as a result of the summer attack of influenza. If sufficient facts and figures could be adduced in favour of this hypothesis, it would be a distinct advance on our present somewhat hazy ideas on the matter. Further, with the view of arriving at a conclusion concerning the length of time that this acquired immunity—if there is such a thing—lasts, it would be interesting to know whether the persons who were attacked last summer but escaped in autumn are, or are not, victims during the present recrudescence of the disease. Any observation on the length of the incubation period and the stage of illness at which a patient is most liable to infect others would also be useful. Most health officers are at present far too busy in striving to combat influenza prevalence to be able to give their impressions on the relative value of the different preventive measures adopted, but when the results of the experience gained during the present pandemic are recorded they should form a valuable guide as to the form which future administrative measures should take.

The preventive measures employed abroad appear to be on similar lines to those adopted in this country. In America school closure was not adopted in Chicago or New York, as the public school system is regarded in these cities as one of the most important factors in the control of disease. A large number of the New York school children come from the poorest areas of the city in which the housing conditions are very bad, and for this reason they are probably less likely to contract infection at school than at home. The better ventilated theatres were used as education centres at which the public were instructed, during the epidemic, on matters relating to health. It is difficult to ascertain whether the wearing of masks by the general population is as efficient a safeguard as was at first supposed. Experiments on this matter have, we understand, been tried in a number of American cities, but there appears to be lack of unanimity of opinion as to the practical value of

the measure, though, where masks were worn by nurses and others attending on the sick, they seem to have afforded at least some degree of protection. Experimental work should help in a matter of this kind, and Dr. H. MASON LEETE'S observations at the Edinburgh City Hospital, recorded in another part of our present issue, should be read in this connexion. In view of the overcrowded condition of the London omnibuses, tramcars, and underground trains at certain hours of the day, which has probably facilitated the spread of influenza in the metropolis, it is interesting to learn that in New York such overcrowding was prevented on the subway trains by an ingenious plan "to stagger the hours of travel," by which it was arranged that different business establishments in the city should open and close at different hours, thus preventing congestion of public conveyances of all kinds.

The value of proper ventilation both in the prevention of infection and in the treatment of the disease comes out in much of the recent literature. In last week's *British Medical Journal* Dr. LEONARD HILL, F.R.S., develops his well-known views on the important influence for good exerted by cool air upon the respiratory membrane.¹ To combat the influenza infection he urges the deep breathing of cool air. An editorial article in the last number of the *New York Medical Journal* tells of certain naval recruits who were so confident of the immunity to catarrh conferred by their open-air life that they submitted to spraying of the throat and nose with live cultures of influenza—without ill result. A less dramatic story with the same moral is told in a recent issue of the *American Journal of Public Health*, where Surgeon-General WILLIAM A. BROOKS, of the Massachusetts State Guard, gives an account of an outbreak of influenza which occurred among the men on the ships connected with the recruiting service of the Shipping Board of East Boston. In order to accommodate the large number of patients a "tent hospital" was established on Corey Hill. Cold and wet weather prevailed during the first few days and the patients had, on this account, to be confined to their tents, but thereafter, whenever the weather was good, every patient was removed from his tent into the open air, a sufficient degree of warmth being maintained by the use of hot-water bottles or heated bricks wrapped in newspapers. The results achieved by this method of treatment were excellent. Nearly every patient had a lower temperature at night than in the morning and felt decidedly more comfortable. The charts of these patients clearly demonstrated the great value of fresh air and sunshine for patients suffering from influenza and pneumonia. The number of cases treated was 351 and there were 35 deaths. In view of the fact that only the most serious cases were moved from the ships to the hospital, such a rate of fatality among the hospital patients may be considered small. Very few of the attendants and nurses contracted the disease. It should be added that they all wore improvised masks made from gravy strainers with five layers of gauze basted on to the wire frame, while every nurse was instructed to wash and disinfect her hands before taking food. Opportunity was afforded during this outbreak to observe the incubation period of influenza, which was generally about 48 hours. Exact information of necessity accumulates slowly, but we may hope surely.

Annotations.

"Ne quid nimirum."

THE EUROPEAN FOOD SITUATION.

A CLEAR conception of the physical results produced by the food blockade of the (late) Central Empires may be gained from the report of a special sitting of the combined medical societies of Berlin, held on Dec. 18th last, which has just come into our hands. The meeting was called by the council of the Berlin Medical Association to hear a series of statements upon the medical aspect of the food question by representative physiologists, hospital physicians, and medical men engaged in food administration. Scarcity had begun already in the middle of the year 1916, but careful press censorship kept the seriousness of the situation hidden not only from the people at large, but from the medical profession itself. Speakers at the meeting recalled with a certain grim bitterness, not untinged with admiration, how when starvation was already killing off thousands of elderly folk and maiming countless young lives the official press was congratulating the country on the advantages of diminished body-weight, the gratifying freedom from gout and eclampsia, and the high standard of intellectual life. Rubner, who, as director of the Physiological Institute in Berlin, may be considered Germany's chief authority on nutrition, set the example at the meeting of throwing off the reticence of years, and detailed the results of a general confidential inquiry into health conditions in the Federated States forced upon the Imperial Government by its expert food advisers during 1917. This inquiry, he said, showed, "to the surprise of all," how far-reaching the effects of the food blockade had already become, how rapidly the death-rate was rising, how widespread was the oedema and other disorders of nutrition, how great the emaciation and reduction of working capacity among the middle classes especially, and how alarming the increase in the death-rate from tuberculosis. From one hospital the bulletin ran briefly: "Our inmates are all dead." Among the living, he added, all spirit of enterprise, all buoyancy of thought, were lost in the general unproductive depression. The actual number of deaths due to lack of food he set down as in the neighbourhood of 800,000. Hamel, medical expert to the Ministry of the Interior, completed Rubner's picture by giving comparative figures derived from official sources. Among children from 1-5 years old the mortality in 1917 was 50 per cent. greater than the 1913 norm, in older children, from 5-15, it had risen 75 per cent. In towns of over 15,000 inhabitants deaths from tuberculosis during the first half of 1918 outnumbered the total for the year 1913. Other speakers gave harrowing details without adding to the gravity of the picture shown by the actual figures. The report, which appears in abstract in the *Muenchener medizinische Wochenschrift* of Jan. 3rd, is reproduced at length in a Berlin medical paper which has been translated by the Fight the Famine Council,¹ and is obtained on application to the honorary secretary at 4, Barton-street, London, S.W.1. The meeting terminated with the adoption of a formal resolution calling on the German Government to do their utmost to

¹ THE LANCET, 1913, i., 1291.

THE LANCET, Feb. 22nd, p. 306.

allot equitably the available foodstuffs, and concluding: "We make appeal to the conscience of the men of enemy peoples in whose breast the sense of responsibility before the tribunal of history is not stifled."

THE RECENT INCIDENCE OF SMALL-POX.

SMALL-POX has recently appeared in different parts of Britain. We understand that there were a few cases in Scotland towards the close of last year, 8 cases being notified in Aberdeen, and 1, which was probably infected in Aberdeen, in Fochabers in Elginshire. Since the beginning of the year 29 cases have been notified in England. The disease occurred in January in the following sanitary districts:—Metropolitan borough of Battersea, 3 cases; metropolitan borough of St. Pancras, 4 cases; urban district of Benfieldside, in the county of Durham, 5 cases; Lower Bebington urban district, Cheshire, 3 cases; county borough of Bootle, 7 cases; Rowley Regis, Staffordshire, 1 case; Liverpool, 1 case. The following districts were affected in February:—Urban district of Wisbech, Isle of Ely, 3 cases; Hartlepool, 2 cases; rural district of Flaxton, N. Riding of Yorks, 1 case. There has thus been a wide topographical distribution of the disease, although nothing as yet like epidemic prevalence. Since a large proportion, especially of the younger section of the community, is now unprotected by vaccination, the recurrence of small-pox will demand vigilance on the part of the health authorities of this country.

SPIROCHÆTES IN TRENCH FEVER.

It is just three years since McNee, Brunt, and Renshaw proved the infectivity of the blood in cases of trench fever. One year later, Riemer described scanty spirochætes in direct blood films from cases of Volhynian fever, which is undoubtedly the same disease. Later, in 1917, Nankivell and Sundell observed and recorded spirochætes in the urine of trench fever cases. The American Commission, under Strong, proclaimed that the virus of trench fever is filterable, and a very recent paper by Sir John Bradford and his colleagues seems to confirm this. Arkwright and Duncan demonstrated the constant presence, after a suitable time, of minute bodies (*Rickettsia* bodies) in the gut and excreta of lice fed upon trench fever patients. These bodies were not found in healthy lice fed upon healthy men, and their presence was correlated to the virulence of the febrile attack. In this issue Dr. A. C. Coles describes scanty spirochætes found in the blood of trench fever patients purposely infected at Hampstead. The characters of the spirochætes agree on the whole with those described by Riemer in 1917 and also, but to a lesser extent, with those of Nankivell. Perhaps the most striking common feature is the looping and intertwining to which Riemer refers very distinctly.¹ Nankivell did not remark this feature, and, on the other hand, described a tapering end to his spirochæte, whereas Dr. Coles finds that his spirochæte never tapers. The question as to whether these various findings have any common ground appears partly solved by the possibility of the *Rickettsia* bodies being of filterable size, and also by the very pertinent fact to which Coles alludes—namely, that Noguchi found that the spirochæte of Weil's disease will pass through a Berkefeld V filter. The investiga-

tion of the filterable virus requires a very special technique, of which McNee and his colleagues do not seem to have taken full advantage, as Edward Hort, whose pioneer work in this connexion is unique, pointed out, and it is quite possible that all these investigations may eventually be merged into a single life-history. Until such a consummation is attained we can but place on record such findings as those of Dr. Coles without, for the moment, attempting to evaluate them.

THE RESTORATION OF SERBIAN LIBRARIES.

WHAT Serbia has suffered in destruction of human life and property during the last four years can never be accurately stated, but in one direction the loss is precisely known and very detrimental to the resumption of normal intellectual life. Serbian libraries and printing presses seem to have been a special object of enemy attentions, their efforts to destroy the monuments of Serbia's ancient civilisation and the future means of culture and education in that country being extremely thorough. The library contained in the University of Belgrade was destroyed, together with the University itself, during the bombardment of that city; the library of the monastery of Dechani was pillaged; and we may add to the list the library of Nish, the scientific library of Alexinatz, the theological library of Prizren, and those of Soplje and Kragujevatz. Serbia's heroism has defeated the military purposes of her enemies, but she will be largely dependent upon her Allies for help in the re-establishment of her literary needs. In another column of this issue Lord Crewe makes an appeal on Serbia's behalf for books of every kind, old or new. Many people in this country will respond generously to Lord Crewe's appeal from a pure desire to help an unfortunate ally, and it may not unfairly be pointed out that their gifts will promote the study of our language and literature in a country where it has hitherto been little known. The secretary of the organisation for the restoration of Serbian Libraries, which is being promoted by the Royal Society of Literature, is Miss Waring, 2, Bloomsbury-square, London, W.C.

RADIUM TREATMENT OF EPITHELIOMA OF THE LOWER LIP.

THERE is considerable diversity of opinion as to the value of radium in the treatment of the different forms of malignant tumour. Some enthusiastic advocates of the therapeutic properties of radium contend that it is of use in almost any form of superficial malignant tumour or at any stage of the disease. The more conservative, however, hold that, while radium is of decided value in the treatment of certain cancerous growths, its scope of utility is limited, and, on the whole, its main value lies in its employment as an adjunct to surgery. Epithelioma of the lower lip is a form of cancer which, perhaps, best lends itself to treatment by radium. In the *International Journal of Surgery* for December, 1918, Dr. George Elliott, of Toronto, discusses at some length the radium treatment of epithelioma of the lower lip and the origin of such growths. That chronic irritation from pipe-smoking is a frequent or even an exciting cause he is inclined to doubt, and statistics from the Department of the Registrar-General of Ontario were quoted in support of this view. Recently in one year in the Province of Ontario the figures relating

¹ See THE LANCET, 1917, i., 347.

to deaths from cancer in all situations were thus tabulated: Cancer and other malignant tumours of the buccal cavity, 94; of the stomach and liver, 631; of the peritoneum, intestines, and rectum, 263; of the female genital organs, 177; of the breast, 126; of the skin, 26; of other organs and organs not specified, 489. Of a total of 1806 classified deaths cancer of the buccal cavity and of the skin is the only form that can be connected with smoking. Dr. Elliott points out that when from this total of 120 are eliminated those in other situations than the lower lip it will be readily appreciated upon what meagre grounds cancer of the lower lip is regarded as being associated with pipe-smoking. He holds that for this form of epithelioma radium is the treatment *par excellence*. From the cosmetic standpoint alone it possesses the obvious advantages that there is little or no scarring; it causes scarcely any pain; it appeals to the patient, who is usually terrified at the idea of operation; and the result of treatment, so far as can be judged at present, seems to be permanent. Statistics obtained direct from the Deputy Registrar-General of Ontario, Colonel J. W. S. McCullough, show that there has been a marked increase in the number of deaths from cancer and other malignant tumours in nearly all situations, especially in the skin, whereas deaths from cancer and other malignant tumours of the buccal cavity have only increased by three. Dr. Elliott attributes the increase of mortality from malignant growths of the skin to the fact that treatment is postponed until the condition is so serious that nothing is of any avail. Radium to be successful must be employed early, and, for obvious reasons, the treatment must have a wider range than the clinical distribution of the lesion. Early diagnosis is essential and there is little doubt that in some superficial cases of malignant growths, and especially, perhaps, of epithelioma of the lower lip, radium treatment is indicated. Dr. Elliott, in his paper, mentions several cases of epithelioma treated successfully by radium. In his opinion the most important detail of treatment is the careful regulation of the dosage, the correctness of which must depend upon the judgment of each individual administrator. He considers that physiological chemistry may some day solve the problem of cancer, and suggests, as has been done before, that this disease may be due to an aberrant metabolic process in the chemical constituents of the cell.

SURGICAL TREATMENT IN HYPERTROPHIC STENOSIS OF THE PYLORUS.

ALTHOUGH it is now many years since hypertrophic stenosis of the pylorus was first described, opinions have ever been at variance whether the condition should be treated by medical or by surgical means. Dogmatism has been rife, but the question remains undecided. Whilst some authorities express themselves as convinced that no proved case ever gets well by medical measures alone, others do not resort to surgical treatment at all, believing that without it the mortality is less. This divergence of view is, no doubt, largely due to varying nomenclature, for the successes of treatment by medical means are regarded by the extremists of the other school as examples of faulty diagnosis, and of confusion between congenital hypertrophic stenosis of the pylorus and mere pyloric spasm. A view intermediate between these two

extremes has been gaining ground in recent years and has found frequent expression in the literature. It is to the effect that actual obstruction of the pyloric orifice by the hypertrophied muscular band is comparatively rare and that spasm is the determining factor. If the hypertrophy is slight there is a good chance of success by medical treatment alone, but when it is considerable surgery offers the only chance of success. If this view be accepted it becomes a matter of great importance to decide when an operation is needed and the optimum time at which it should be performed. One of the reasons which have led the physician to hesitate before resorting to surgery has been his unwillingness to subject so small and feeble an infant, and one so lacking in resistance, to the shock inseparable from a severe operation. Speed and a minimum of exposure and manipulation are very desirable if shock, hitherto the commonest cause of surgical failure in this condition, is to be avoided or reduced. These desiderata would appear to be attained in the operation devised by Rammstedt, one frequently employed in the United States, but hitherto little known in this country. It consists in the simple division of the hypertrophic muscular band by an incision in the long axis of the pylorus transverse to the muscular fibres without interfering with the mucous membrane and without closing the gap so formed by sutures. The whole operation, including the initial incision of the abdominal wall and its subsequent closure, occupies only from five to seven minutes, and very little manipulation is required. Another advantage is that the normal condition of the alimentary canal is restored. At a recent meeting of the Medical Society of London, a report of which is included in this issue, Mr. R. A. Ramsay described in detail this operation as he had performed it on three occasions. Although few in number they illustrate the reasonableness of the procedure and serve to bring the operation to the notice of physicians and surgeons on this side of the Atlantic. Mr. Tyrrell Gray, whose experience had been greater, said that it was quite in accord with the general conclusions arrived at, and the opinion of these two finds, perhaps, its greatest support in the work of W. A. Downes, of New York, who, by substituting Rammstedt's operation for gastro-enterostomy reduced the mortality for the surgical treatment of this condition at his hands from 43 to 24 per cent.

SENSATION AND THE CEREBRAL CORTEX.

A RECENT number of *Brain* contains a further contribution by Dr. Henry Head to the subject which he has made peculiarly his own—that of sensation in its different phases at each and all of the various levels of the central nervous system.¹ He has taken the opportunity of restating and succinctly summarising the results of previous investigations on sensation as it manifests itself in lesions of the peripheral nerves and spinal cord. The war has provided numerous chances of minute examination of cortical and subcortical cases where the lesion is small and localised on the main sensory pathways or centres, and Dr. Head is thus able to provide a remarkably complete review of the whole subject, which on both theoretical and practical sides is deserving of close attention. In the lower levels of the nervous system affection of certain sensory tracts produces strictly limited

¹ THE LANCET, 1918, ii., 657.

alterations in sensation. In the cord dissociation of sensibility—touch, for instance, being appreciated, while sensibility to pain and temperature is lost—is a common occurrence, and the neurologist justifiably localises the conduction of certain forms of sensation in certain paths. In the peripheral nerves the specific characters of deep and cutaneous sensibility are demonstrable with ease where lesions disturbing the conduction of one or other take place. With the cortex, however, the position is of a quite different nature. If the sensory pathway, with all its anatomical and physiological complexities, is regarded as simply a chain, with a receiving organ at the periphery, a transmitting tract, and a discriminating organ at the cortex, the sensory conditions are not identical throughout the whole mechanism. At the periphery, as Dr. Head says, we see how a measurable physical stimulus is transformed into various physiological reactions; at the cortex we observe the ultimate condition of these impulses, in the act of subserving sensation, after they have undergone integration and selection. It should thus be manifest that in cortical lesions we have changes which can be expressed in psychical terms only. These changes are, according to the results of the researches detailed in this paper, definite loss of power to recognise spatial relationships, graduated intensity, and similarity or difference in objects in contact with the body. Otherwise expressed, the cortex, speaking always from the sensory viewpoint, is much less concerned with the direct appreciation of crude sensory stimuli of whatever order than with discrimination of the triple type just mentioned. It is in the reactions of the optic thalamus, freed from cortical control, that the non-discriminative aspects of sensation find their expression.

In this ingenious way Dr. Head endeavours to bring into line what on the sensory side corresponds to the more familiar facts of experimental physiology as evidenced on the motor side. We owe more especially to the genius of Hughlings Jackson and of Sherrington the hypothesis, and its proof, of the existence of two motor mechanisms in mammals, or, rather, of a primitive motor mechanism subsequently controlled from higher, cortical, areas, but nevertheless still existing and capable, in certain circumstances, of manifesting its independence. Removal of cortical control allows mesencephalo-spinal motor mechanisms fuller play. With the details of these phenomena we are not here concerned, but of the general statement there can be no doubt. Analogously, according to Dr. Head, removal of cortical sensory control allows lower sensory mechanisms to assert themselves, mechanisms which, apparently abolished, nevertheless exist and are capable of independent activity. This is, of course, but a very incomplete statement of the facts, though for the sake of emphasising the idea of cortical sensory control, as opposed to mere appreciation, it is well to strip, for the moment, the main conception of its accessories. At all physiological levels of the nervous system sensory integration is taking place. Stimuli of varying kinds compete simultaneously for peripheral receptors. Many impulses arising thus, by selection, in end-organs do not, as a fact, traverse completely the sensory pathways to the cortex, but are turned aside at lower levels into reflex paths and never, ordinarily, reach consciousness to become "sensations." Others, however, reach the optic thalamus and the cortex;

in the case of the former, they excite conditions underlying the affective aspects of sensation; in the case of the latter, the discriminative aspects. In a word, selection, rejection, and adaptation are constantly taking place; only the sum is presented to consciousness. Dr. Head holds that on the higher physiological planes impulses precluded from exciting sensation are not necessarily wiped out; they may produce a profound and manifest effect, although they cannot excite consciousness.

THE LOWER UTERINE SEGMENT.

THE lower uterine segment has been a source of contention among anatomists and obstetricians for many years past and an immense amount of literature bearing on the subject has been published. The question is by no means settled, and from time to time papers are written by adherents of the two main theories adding further testimony in favour of their particular view. The real problem, put shortly, is, Does any part of the cervix take a share in the formation of the lower part of the body of the uterus during pregnancy or does it not? Many of the earlier authorities believed that towards the end of pregnancy the upper part of the cervix became taken up and contributed to the formation of the uterine cavity, so that the internal os was situated at a much higher level relatively than in the non-pregnant uterus. Another point which arises from this is the exact anatomical situation of the so-called ring of Bandl or the retraction ring. Does this represent the junction of the upper and lower uterine segments, or is it the upwardly displaced internal os? At the present time the great majority of anatomists and obstetricians, we believe, follow the teaching of Barbour, and hold the former view rather than the latter. At the same time the question is by no means settled, for so recently as 1907 a drawing of a new frozen section was published which appeared to lend great support to the view that the whole of the lower uterine segment is developed from the cervix. In the present number of THE LANCET we publish a paper by Professor Hastings Tweedy, in which he suggests that the thickened fibro-muscular bands in the pelvic diaphragm, which hitherto have been called the transverse ligament of the cervix, or Mackenrodt's ligament, should be termed the tendons of the uterus. He cannot conceive of this tissue as forming an imperfect diaphragm across the pelvic floor, as he maintains if this were the case it must inevitably be torn to such a degree in parturition that it could never regain its original continuity. It appears to us that the question of its ability to stretch rather than to tear would depend upon the relative amounts of muscle and fibrous tissue present, and we see no insuperable difficulty in believing that softened fibrous tissue could yield sufficiently and not tear during labour. The lower uterine segment, he holds, is formed by a growth, and not by a mere stretching of pre-existing tissue, and he adds that it is impossible to account for its presence by any other explanation. With this statement most authorities would agree, and there would seem to be no difficulty in believing that the lower part of the uterus grows, just as does the upper part, during the progress of a pregnancy. Whether the growth is due to the pressure of the fetus or to the stimulus to growth of the pelvic tissues, which is one of the consequences of pregnancy, does not appear to be very material.

Professor Tweedy further maintains that it is wrong to regard the cervix as consisting of tissue prone to stretch, and adduces as an argument in favour of this assertion the hypertrophy of the cervix which takes place in procidentia uteri. It is easy, however, to demonstrate on any well-marked case of procidentia uteri that the accompanying elongation of the uterine cavity is due primarily to stretching, and that the permanent elongation which eventually occurs is a later phenomenon. Professor Tweedy believes that when pregnancy occurs the internal os opens and the ovum finds room for its growth in the upper region of the cervix, so that he is an upholder of the view that the lower uterine segment is really derived from the cervix. This view, of course, may turn out ultimately to be the correct one; at present the matter can only be regarded as non-proven. We do not, however, think that the arguments put forward by the author of this paper would be sufficient to cause those obstetricians to change their opinions who hold that the lower uterine segment develops with the rest of the uterine cavity in the very remarkable growth which occurs during pregnancy.

THE SUPPLY OF MEDICAL STUDENTS.

WE have received from the General Medical Council the following statement giving the number of medical students in actual attendance on courses of professional instruction in January of the present year, for each period of the curriculum:—

| Topical distribution. | First year. | | Second year. | | Third year. | | Fourth year. | | Final year. | |
|-----------------------|-------------|-----|--------------|-----|-------------|-----|--------------|-----|-------------|-----|
| | M. | W. | M. | W. | M. | W. | M. | W. | M. | W. |
| England and Wales ... | 1089 | 350 | 700 | 326 | 461 | 291 | 354 | 141 | 428 | 108 |
| Scotland | 617 | 293 | 483 | 306 | 335 | 210 | 252 | 156 | 333 | 108 |
| Ireland | 446 | 112 | 336 | 125 | 405 | 92 | 339 | 64 | 175 | 10 |
| Total | 2152 | 755 | 1519 | 757 | 1186 | 593 | 945 | 361 | 936 | 226 |

M, men. W, women.

The totals for the several areas in the order given are 4238, 3093, and 2159, with a grand total of 9490, of whom 6798 are men and 2692 women. The figures should be compared with those for May of last year which appeared in THE LANCET of July 27th, 1918 (p. 113). The grand total of medical students has received a quite astonishing addition in the last six months, as will be seen from the following summary:—

Total Medical Students in Attendance.

| | | | |
|-------------------|------|-------------------|------|
| January, 1917 ... | 6682 | May, 1918 ... | 7630 |
| October, 1917 ... | 7048 | January, 1919 ... | 9490 |

Evidently nothing has occurred to make the profession of medicine less attractive as a career in the eyes of parents and their adolescent children. The numbers of women entering on a medical career are still increasing, but their ratio to men students has diminished in consequence of the very large influx of the latter in the last six months.

THE BRITISH PSYCHOLOGICAL SOCIETY.

THE constitution of this society has received an important emendation in the admission of persons not actually engaged in psychological work. At a special general meeting held in London on Feb. 19th it was unanimously resolved to admit others interested in the various branches of psychology, and to institute three special sections, devoted respectively to the educational, industrial, and medical aspects. Further particulars of this

interesting development may be obtained from the honorary secretary of the British Psychological Society, the Psychological Laboratory, University College, London, W.C. 1.

THE Governors of the London Hospital decided on Wednesday last to fill the vacancies on the honorary medical staff, left by the retirement of Dr. F. J. Smith and Dr. Henry Head, with whole-time paid officers, consisting in each case of director, three clinical assistants, with laboratory and clerical staff.

Dr. Addison, President of the Local Government Board, has appointed Miss Janet Mary Campbell, M.D., M.S., to be a medical officer of the Board in special charge of the work of the Board in respect of maternity and child welfare.

THE following lectures will be delivered at the Royal College of Physicians of London, Pall Mall East, on Tuesdays and Thursdays in March and April, at 5 o'clock:—Milroy Lectures: Dr. John C. McVail (March 13th, 18th, 20th), "Half a Century of Small-pox and Vaccination"; Goulstonian Lectures: Dr. W. W. C. Topley (March 25th, 27th, April 1st), "The Spread of Bacterial Infection"; Lumleian Lectures: Sir Humphry Rolleston (April 3rd, 8th, 10th), "Cerebro-spinal Fever."

A CONFERENCE on Post-war Developments relating to Public Health has been arranged by the Royal Sanitary Institute for March 13th-15th, to be held at 90, Buckingham Palace-road, London, S.W. 1. Among the subjects on the programme are: City Hygiene in Relation to Employment, to be introduced by Dr. W. J. Howarth; the Public Health Aspect of Tuberculosis, by Dr. Noel D. Bardswell; Public Health Propaganda and Social Work, by Professor H. R. Kenwood; Welfare Work in Factories, by Dr. Edgar L. Collis; and Child-Welfare Work, by Dr. Flora Shephard.

URBAN VITAL STATISTICS.

(Week ended March 1st, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had increased from 15.0 to 35.7 in the five preceding weeks, was again 35.7 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 32.4, or 1.8 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 13.0 in Coventry, 16.3 in Grimsby, and 16.6 in Gillingham, to 56.0 in Salford, 66.1 in Tynemouth, 62.1 in Wakefield, 65.6 in St. Helens, and 66.7 in Blackburn. The principal epidemic diseases caused 200 deaths, which corresponded to an annual rate of 0.6 per 1000, and included 51 from whooping-cough, 48 from measles, 47 from infantile diarrhoea, 38 from diphtheria, 12 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1.3 in Sheffield and in Middlesbrough, 1.5 in Warrington, and 4.0 in Rotherham; and whooping-cough of 1.7 in Wolverhampton, 1.9 in Stoke-on-Trent, 2.0 in Rhondda, and 2.3 in Great Yarmouth. The deaths attributed to influenza, which had increased from 224 to 3054 in the five preceding weeks, further rose to 3389, and included 808 in London, 196 in Liverpool and in Manchester, 159 in Birmingham, 130 in Leeds, 129 in Bradford, 96 in Salford, 94 in Newcastle-on-Tyne, and 90 in Leicester. There were 1036 cases of scarlet fever and 1172 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1088 and 1185 respectively at the end of the previous week. The causes of 81 deaths in the 96 towns were uncertified, of which 15 were registered in Birmingham, 12 in Liverpool, 7 in Manchester, and 6 in Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17.0 to 38.4 in the six preceding weeks, further rose to 40.0 per 1000. The deaths from influenza numbered 78, while in 618 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 75 and 503 respectively. The 1037 deaths in Glasgow corresponded to an annual rate of 48.3 per 1000, and included 37 from whooping-cough, 9 from measles, 4 from diphtheria, 2 from scarlet fever, and 1 from infantile diarrhoea. The 266 deaths in Edinburgh were equal to a rate of 41.2 per 1000, and included 9 from whooping-cough, and 2 each from scarlet fever and diphtheria.

SOME EXPERIMENTS ON MASKS.

BY H. MASON LEETE, M.B., B.S.; B.HY. DURH.,
M.R.C.S., L.R.C.P. LOND., D.P.H.,
SENIOR MEDICAL ASSISTANT AND BACTERIOLOGIST, CITY
HOSPITAL, EDINBURGH.

THE third wave of the influenza epidemic finds us with no settled ideas as to the use of masks as one of the preventive measures in dealing with this disease. The lay press discusses whether or no they should be worn, and there is little wonder that opinion is divergent when one finds opposite views as to their efficiency given by medical authorities themselves.

At the time of writing we have in this hospital three pavilions set aside for influenza patients, and among the staff attending these patients cases, some serious ones, are constantly cropping up. Any hospital dealing with the disease must have to face a similar problem and must be anxious to protect its staff in the best manner possible, and the question of the use of masks arises. But if masks are to be worn they must be efficient ones, and the simple experiments described are attempts to test the efficacy of mask protection and to form some opinion as to their value from the bacteriological point of view.

Account of the Experiments.

Infection, whatever precise form it may be, comes from the patient in the form of droplets of moisture from his mouth and nose. In coughing and sneezing these droplets are expelled with considerable velocity for some distance from the patient, and in this manner those in close contact with him are undoubtedly infected. In order to reproduce this moisture distribution method, and to give such droplets a definite velocity, we prepare an emulsion of *Staphylococcus pyogenes aureus* and project this in the form of a fine spray from an ordinary De Villbliss Atomiser No. 16, fixed at a given distance from a Petri dish upon which the inoculum was received. In most of our experiments this distance was 9 inches, and as this particular atomiser will give a definite visible spray for a distance of 3 feet it is obvious that at 9 inches distance the particles will possess a considerable velocity.

The emulsion of staphylococcus used was standardised to contain approximately 1000 million organisms per cubic centimetre. The staphylococcus was chosen because it is easily cultivated, easily emulsified, does not die out readily, has distinctive definite colonies which show up early, and being comparatively harmless its projection in the laboratory in spray form has not the dangers which other organisms might have. Here, again, it must be pointed out that we are not dealing with influenza infection from the standpoint of the specific organism concerned, but are merely investigating the carriage of living organisms contained in minute droplets and the powers certain materials have of arresting the progress of these infected droplets.

The material used in the first series of experiments was ordinary non-medicated surgical gauze such as is commonly used for dressings. This is a wide-meshed gauze which in the rolls in which it is sold has already been folded on itself three or four times. As this folding, however, is uneven and we require a standard thickness from which to work in all our experiments, we opened out the gauze to its full extent and the single layer of gauze so obtained is our standard—this doubled is a two-layer gauze, and so on. Reckoning on this plan the gauze as it comes in the package is a four-layer gauze though, as stated, uneven. The gauze in various layers was simply fastened across the open Petri dish and was thus but a distance of 1.5 cm. from the medium which it was protecting. The movable nozzle of the atomiser was directed towards the centre of the dish, which was held vertically, looking towards the atomiser at a distance of 9 inches. Two quick complete compressions of the bulb were then given, and the plate which had thus been "fired at" was immediately covered and incubated. Twelve hours later the number of yellow staphylococcal colonies was counted and recorded.

In some cases where two plates incubated under the same conditions showed any marked divergence in the number of colonies we tested a series of plates and took the average number of colonies as our number for that particular plate

and protection, though for convenience they are here recorded as single plates. Where our two original plates showed approximately the same number of colonies that number was accepted and a series and average not made.

Results of Experiments.

Table I. shows the results in the first series, which are rather surprising, inasmuch as such a considerable number of layers fail to prevent transmission. This is undoubtedly due to the gauze being of a very open weave.

I.—Surgical Gauze; Dry.

II.—Muslin; Dry.

| Plate No. | Protection. | Colonies.* | Protection. | Colonies.* |
|-----------|-------------|--|-------------|------------|
| 1 | NIL. | Confluent growth. Counting impossible. | 2 layers. | 4300 |
| 2 | 2 layers. | 17,500 | 4 " | 1400 |
| 3 | 4 " | 4,200 | 6 " | 100 |
| 4 | 8 " | 2,000 | 8 " | 40 |
| 5 | 12 " | 700 | 10 " | NIL. |

Working distance 9 inches. * Approximate number of colonies per plate.

In our second series of experiments (see Table II.) we used ordinary butter-muslin as the protecting material, the organisms, distance, and spraying method being exactly as before. The muslin was a fairly fine one, having 24 threads to the centimetre.

Our next modification consisted of using a muslin thickness of fairly permeable qualities as already ascertained, and varying the distance of the spray. For this we chose a four-layer muslin protection, and the average results are given in Table III. We then tried the effect of damping the muslin

III.—Muslin*; Dry. IV.—Muslin*; Damp. V.—Coarse spray.†

| Plate No. | Working distance. | Colonies per plate. | Working distance. | Colonies per plate. | Protection. | Colonies per plate. |
|-----------|-------------------|---------------------|-------------------|---------------------|-------------|---------------------|
| 1 | 12 in. | 88 | 9 in. | 2000 | 4 layers. | 350 |
| 2 | 18 " | 14 | 12 " | 288 | 6 " | 230 |
| 3 | 24 " | 7 | 18 " | 127 | 8 " | 50 |

* Four layers. † Muslin; dry. Working distance 9 inches.

by soaking the mask in water and then wringing it well out (Table IV.). Finally, we modified the spray from the fine atomiser effects used throughout. In this last series a much coarser spray was used, this result being brought about by closing the normal air-escape hole with which this particular atomiser is provided. Taking a distance of 9 inches and using various layers of dry muslin our plates (Table V.) showed that a fine spray has greater penetrative powers than a coarse one, despite the greater momentum of the heavier particles.

Conclusions.

When the conclusions deduced from this series of experiments come to be applied to the practical question of mask wearing it is obvious that certain modifying factors must be taken into account. The force of our spray working at a distance of 9 inches is undoubtedly much greater than that produced by even vigorous sneezing or coughing by a patient. Such a distance was chosen in order to get a series of positive results and to provide a large margin of safety. On the other hand the negative pressure produced by suction during inspiration by the wearer of the mask and amounting in practice to an increase of the projective force from the patient has to be borne in mind. Then our organism content of the spray is high, but here it must be urged that the question is rather one of whether organisms can pass than as to how many actually pass.

Several points are being further inquired into and other modifications devised, but basing our remarks on the experiments so far performed, it would seem that:—

1. Surgical gauze is an unsatisfactory material for making masks.
2. Butter-muslin is a more satisfactory material and has the advantage that it is easily obtained anywhere. Masks made of it should consist of at least four layers.
3. Damping the mask has the effect of considerably increasing the permeability and this fact should be borne in mind when masks have to be worn for any length of time.
4. Such a mask is not absolutely protective from droplet infection but materially reduces the risk and as such is of practical value.

5. A really protective mask would have to consist of six or eight layers of muslin or similar material and would need to be attached in an air-tight manner by means of an elastic band gripping all round the head and fitted with air-tight eye-pieces very much after the manner of the gas-mask in use in the Army. As it is not likely that such a form would ever become popular, the ordinary mask must be made as large as possible, come up to just under the eyes above and almost down on to the neck below, and be held in position fairly tightly by elastic or tapes above the ears and round the neck, thus decreasing as far as possible "round the corner" infection.

6. It is only necessary to wear such masks in the immediate vicinity of the patient.

7. Their application is suitable in any disease where the infection appears to be conveyed by air-borne droplets coming from the patient.

I have to thank my colleague, Dr. R. J. M. Horne, for suggestions and assistance in carrying out the experiments.

PROPHYLAXIS IN INFLUENZA.¹

BY F. T. MARCHANT, M.R.SAN.I.

ASSISTANT DEMONSTRATOR, PUBLIC HEALTH DEPARTMENT, UNIVERSITY
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As is well known, the foci of infection in this disease are the upper respiratory passages. It is for this reason that nasal and throat washes are recommended as a simple expedient to keep the nose, naso-pharynx, and fauces clean. Although probably efficacious if properly performed, their use involves trouble and difficulty with some adults and most children, and this tells against their employment.

During epidemic prevalence the odours which greet us everywhere indicate the faith which the people have in something which makes its presence distinctly evident. The psychological effect is unquestionably valuable as a combative measure; but it is desirable to ascertain if there really is a germicidal value in the emanations from these essential oils.

To test this the surface of the agar in several plates was smeared with coli broth, then covers were applied and the plates inverted. A drop of the oil was next placed in what is now the bottom of the plate, but which was previously the lid, so that only the volatilised material came in contact with the inoculated agar above it. The plates were then incubated for 24 hours at 37° C. The results were as follows:—

| | | | |
|-----------------------|------------|------------------------|-------------|
| Oil of aniseed | } A growth | Oil of cinnamon | } No growth |
| " " cloves | | and cloves | |
| " " eucalyptus | | Alcoholic solution | |
| Menthol | | of aniseed, cloves, | |
| Camphor | | cinnamon, and for- | |
| Alcohol alone | | malin | |
| Control | | Formalin alone | |

It will be seen from these results that oil of cinnamon presumably destroys, or at least inhibits, the growth of the organism. The same, of course, applies to the formalin. The germicidal power of formic aldehyde is generally recognised. Incidentally it has found a footing in the form of compressed tablets which are in great demand for throat infections; but owing to the irritation which they may produce their employment is restricted. I find that cinnamon not only masks the irritating effect of the formalin when the mixture is in suitable proportion, but that a decidedly pleasant mixture results which has a greater germicidal effect than the formic aldehyde alone. The oil and the formalin mix readily in alcohol or methylated spirit, making a very clear amber solution. Various amounts of each were added to alcohol, and I concluded that 120 drops of the oil and 60 drops of formalin to the ounce of alcohol furnished the most satisfactory results. If a few drops of this mixture be placed on a handkerchief the alcohol quickly evaporates, leaving a very pleasant odour with no appreciable irritation from the formalin. The germicidal power of this mixture was determined as follows: Five agar plates were prepared in the manner already indicated. Two drops of the mixture were placed in four of these, the fifth acting as a control. At the end of half-an-hour the lid (now lower part) of one of the four plates was replaced by a clean one, so that the organism was acted upon by the volatile oil for 30 minutes only. In a similar

manner the organisms in the second and third plates were acted upon for 1 hour and 1½ hours respectively. The following results were obtained after incubation for 24 hours :—

| | | | | |
|-----------------------------------|-----|----------------------|-----|------------|
| Organism exposed for half an hour | ... | ... | ... | No growth. |
| " | " | one hour | ... | " |
| " | " | one and a half hours | ... | " |
| Control | ... | ... | ... | A growth. |

Next, similar tests were performed to see if the formalin usefully enhanced the proven power of the cinnamon and, further, to ascertain what was the shortest time of effective exposure. Two solutions were used, one containing to the ounce of alcohol 120 minims of cinnamon, and the other 120 minims of cinnamon with 60 minims of formalin. The results were:—

| Cinnamon alone. | | Cinnamon and formalin. | |
|---------------------|---------------|------------------------|--|
| 6 minutes' exposure | ... A growth. | A growth. | |
| 10 " " | ... " | No growth. | |
| 15 " " | ... " | " | |

In order to imitate the conditions under which the mixture would actually be used four drops of the mixture were applied to a square inch of clean linen, which was placed in the bottom of each plate. The last described experiment was then repeated with the same results of absence of growth after 10 minutes' exposure. In order to prove that the organism was destroyed and its growth not merely inhibited sterile broth was poured on to the agar in the plate, which was then incubated at 37° C. for 24 hours. The broth remained clear, proving that no coli organism was living. Therefore, it seems safe to conclude that an alcoholic solution of oil of cinnamon and formalin of the strength indicated is capable of by its emanations of destroying the coli organism after an exposure of 10 minutes, and this being so, we may infer that the influenza organisms would also be destroyed. There can be little doubt that this mixture applied liberally to handkerchiefs and so inhaled would prove a useful prophylactic measure. I would like to emphasise the fact that the emanations would permeate the whole of the respiratory tract, thereby reaching parts that an ordinary gargle, or even a throat lozenge, cannot possibly reach. Moreover, the dissolved lozenge is swallowed, and this sometimes leads to gastro-intestinal disturbances.

THE POST-GRADUATE ASSOCIATION:

SCHEME FOR POST-GRADUATE MEDICAL EDUCATION APPROVED BY THE LONDON MEDICAL SCHOOLS.

A SCHEME of post-graduate medical education, advanced by representatives of post-graduate schools and special hospitals in London, has now reached the stage of a final draft. This draft is returning to the individual bodies for their approval, after which a public meeting will be held, probably some time in April, to place the whole organisation on an early working basis.

The scheme begins by a general statement of objects. A post-graduate scheme is obviously required to meet the needs of these classes : Practitioners who wish to use any opportunity, such as that afforded by a holiday, to bring their knowledge up to date or to learn the details of some specialism ; Officers of the Navy, Army, Air Force, Indian, and Colonial Medical Services, often far removed from scientific centres in their daily work ; Graduates from the Colonies, from such Allied countries as France and Japan, and perhaps especially from America, who have hitherto taken out post-graduate courses in Germany and Austria because no like facilities were offered in Great Britain. This sort of assistance has been asked for by the Japanese and it is believed that it will be welcomed by the French. The final draft scheme provides for the coöperation of America and France through the recently organised American Post-Graduate Union and the Committee of the Société Médicale des Hôpitaux de Paris on " Medical Education in the Hospitals for Foreigners."

Scheme for General and Special Post-Graduate Courses.

The draft scheme provides for general and special post-graduate courses in the existent London medical schools where medical education for students is provided. It is suggested that each school should provide two courses of post-graduate teaching, each of a fortnight's duration, or

¹ The investigation was undertaken at the suggestion of Professor H. R. Kenwood, M.O.H., Stoke Newington.

one course of a month's duration, the dates varying in accordance with the convenience of the institutions and conforming to a definite rota. The ordinary instruction of the medical student will not be interfered with. The teachers at each school will suggest what courses they are prepared to institute, and will draw up a programme of details. At each school also courses in some special subject will be arranged, lasting usually for not less than three months, where research work will be invited, and where those following the course may act as clinical assistants to the physician or surgeon in charge of the particular subject. All the post-graduate students, moreover, will be afforded facilities to attend the ordinary hospital practice.

Existing London post-graduate schools and special hospitals will continue the instruction they are already giving in unison with the general scheme, but with such time limits as they may choose; while the medical schools of the United Kingdom—provincial, Scottish, and Irish—will be invited to coöperate with the London Association in providing periodical courses of instruction.

The Central Organisation.

The Council of the Post-Graduate Association will consist of representatives of all participating teaching institutions, as well as of representatives of the Board of Education, National Insurance Commission, and analogous bodies in the Overseas Dominions and the United States of America. The constitution of the Association will be framed so as to enable the holding of property and the receiving of grants from the Board of Education. The Council will appoint an executive committee and administrative committees, which bodies in their turn will be responsible for the appointment of whole-time officers and secretarial staff. The home of the Association will be a building in central London, which it is hoped will become the meeting place of the medical graduates of the Empire and Allied Nations.

Finance.

It is hoped that sufficient money will be forthcoming to provide from private donations for the erection and equipment of the building and some endowment for its annual maintenance. Every student will pay a registration fee in addition to fees for instruction. The income of the Association will thus be derived from registration fees, fees for courses, personal gifts, and Government grants. It is proposed to apply to the Board of Education for a grant to make the Association self-supporting. The participating schools would be under no financial liabilities, while any grants from the Board of Education will be paid to the Association, the constituent schools being only responsible to the Association for the instruction undertaken. The Executive Committee will decide the fees in consultation with the individual schools, and each participating school will undertake to give no organised post-graduate courses, save for examination purposes, independently of the central organisation.

MINISTRY OF HEALTH BILL: VIEWS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

THE Society of Medical Officers of Health have had under consideration the Ministry of Health Bill introduced into the House of Commons on Nov. 7th, 1918, and have prepared the following Memorandum, to which they are inviting the attention of the local sanitary authorities. As the new Bill, introduced on Feb. 17th, is practically identical with the earlier one referred to above, the Society of Medical Officers of Health suggest that it would serve a useful purpose if the councils of the authorities communicated the result of their deliberations to the Member or Members of Parliament for the borough or division at an early date.

Ministry of Health Bill, 1918.

This Memorandum was approved on behalf of the Society of Medical Officers of Health by the Council at a meeting held at 1, Upper Montague-street, Russell-square, W.C., on Jan. 17th.

The Society of Medical Officers of Health have urged from time to time the need for the establishment of a Ministry of Health. They note with satisfaction that a Bill has been introduced to establish a Ministry of Health and a Board of Health to exercise in England and Wales, and in Scotland, respectively, powers with respect to health and local govern-

ment, and for purposes connected therewith. They especially approve of Clause 2 of the Bill, which makes it the duty of the Minister of Health to take all such steps as may be desirable to secure the effective carrying out and coördination of measures conducive to the health of the people, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons in health service.

The Society of Medical Officers of Health consider that Clause 3 of the Bill dealing with the transfer of powers to and from the Ministry of Health is unsatisfactory.

In the first place this clause encumbers the Minister at the outset with matters outside the scope of national health, notably those powers and duties of Insurance Commissioners which are not strictly relative to health.

In the second place this clause does not transfer to the Minister at once certain fundamental health matters such as—(a) the powers and duties of the Board of Education with respect to the medical inspection and treatment of children and young persons; (b) the powers and duties of the Minister of Pensions with respect to the health of disabled officers and men after they have left the service; and (c) the powers and duties of the Secretary of State under the Lunacy Acts, 1890 to 1911, and the Mental Deficiency Act, 1913.

In the third place this clause transfers to another body, the Privy Council, work for which the Minister of Health should be responsible, namely, the duties heretofore performed by the Medical Research Committee.

Lastly, this clause omits all reference—and there is no reference in the Bill—to the transference to the Minister of certain other fundamental health matters, for example, the health functions of (1) the Home Office, including the sanitary conditions of factories, the investigation and prevention of industrial diseases, the work of certifying factory surgeons, and the care of patients under the Inebriates Acts; (2) the Board of Trade as regards the health of seamen and emigrants; (3) the Board of Agriculture and Fisheries as regards certain dairy and farm produce important as affecting national health; (4) the Privy Council as regards the General Medical Council, which controls the training and conduct of medical practitioners, and the Pharmaceutical Society with similar powers relative to chemists under the Pharmacy Acts.

The Society of Medical Officers of Health are of opinion that the consultative councils to be set up under Clause 4 of the Bill should report to the Minister through a health council which should be established under the Bill, so that the survey of national health may be balanced, comprehensive, and continuous, and the coördination of the work of the Ministry real and complete.

Generally the Society of Medical Officers of Health are of opinion that any Bill for the establishment of a Ministry of Health should be founded on the following basic principles: that health is a matter of national concern rather than of sectional or vested interests; that the functions of the Ministry to be created must be to protect, maintain, and improve the health of the nation as a whole and of every unit of the nation in particular, regardless of age, sex, occupation, the disease contracted, poverty, or insurance; that to attain this end and secure and complete the central organisation the Ministry of Health must from the outset assume control of all the health functions of existing central departments; that a Ministry of Health will be in a large measure ineffective unless there are established suitable areas for local health administration with one local health authority in each area responsible for all health matters.

In the opinion of the Society of Medical Officers of Health a Bill not based on these principles, or based only on some of these principles, is doomed in administration to failure, complete or partial. The Memorandum is signed on behalf of the Society of Medical Officers of Health, by order of the Council, by Professor Henry R. Kenwood, President, and Dr. Joseph Priestley and Mr. T. W. Naylor Barlow, the honorary secretaries of the Society.

ST. ANDREW'S HOSPITAL, DOLLIS HILL.—This institution, which has just issued its sixth annual report, was opened in 1913 at Dollis Hill for the reception of patients who, while not suitable subjects for free treatment in charitable institutions, are unable to meet the charges necessary to secure adequate medical or surgical treatment in private nursing homes. During the war it has been used for the treatment of soldiers and sailors, but when the beds are surrendered by the military authorities the hospital will resume the work for which it was founded. The report for 1918 shows a deficit of about £40 on the year's working, while the building debt amounts to £5524. Aditional expenses will be incurred in restoring the war's to their pre-war use, and an appeal is being made for contributions to wipe out the debt and to provide a permanent endowment for the hospital.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

The Influenza Mortality in South Africa.

IN the Union House of Assembly at Cape Town on Jan. 23rd the Minister for the Interior, Sir Thomas Watt, stated that the deaths in the Union of South Africa from influenza and its complications from August 1st to Nov. 30th, 1918, were approximately Europeans, 11,726; other than Europeans, 127,745. The returns showed:—Cape: Europeans, 5855; others, 81,253. Transvaal: Europeans, 3267; others, 25,397. Orange Free State: Europeans, 2242; others, 7495. Natal: Europeans, 362; others, 13,690. The Government and local authorities had expended £308,000 in combating the epidemic; a few minor recrudescences of the disease still exist in South Africa. Roughly one-fourth of the population are Europeans, yet the mortality is over 10 natives to 1 European.

An interesting piece of news comes from Saul's Poort, 50 miles from Rustenburg in the Transvaal, where there is a native village of 1000 people. When the headman heard about the influenza he issued orders that no one was to leave the place and that no outsider was to be admitted. Everyone was dipped in a carbolic dip and took a dose of medicine. Not a single case of illness occurred, although the disease caused 16 deaths in two little native villages near by. These villages were infected by a native wedding party from Rustenburg. These were guarded night and day to prevent any access to the segregated clean village.

I may mention here that a somewhat heavy influenza toll has been exacted in the British East African Protectorate; Europeans, Asiatics, and natives all suffering, the last named the most severely. As in South Africa and other countries, several medical men have died in the cause of duty. These medical men who have succumbed to the disease include Dr. B. W. Cherrett, medical officer of health for Nairobi, the capital; Dr. Barrett; Dr. I. M. O'Connell, medical officer, Kenia Province, Fort Hall; and Dr. W. H. Heard, of the Uasin Gishu plateau, a Dutch district. Dr. Heard's death occurred at sea while en route for home, his wife also succumbing to the disease. Dr. Heard had served through the Boer War, and held the Queen's medal with two clasps. Mrs. Walker, another victim to influenza, was the wife of the Government veterinary pathologist.

Cape Medical Council.

The recent election of four members of the Cape Colonial Medical Council resulted as follows: Dr. W. Darley Hartley, 172 votes; Dr. J. Wood, 162; Dr. A. Jasper Anderson, 161; Dr. A. Marius Wilson, 128; Dr. M. L. Hewat, 94. Another candidate, Dr. L. A. W. Beck, is now deceased. The first four gentlemen were elected, and will remain in office for three years or until the coming into operation of the new Union Medical Act. Sir John Hewat, M.B., C.M. Edin., of Woodstock, Cape Town, has received many congratulations on his appointment as Knight Bachelor.

The Late Major H. W. Sykes, R.A.M.C.

Major Harold Widdrington Sykes, R.A.M.C., died at Beira, Portuguese East Africa, on Nov. 11th, aged 34, from influenza. Major Sykes was the only son of the Rev. W. Sykes, vicar of Meldon, Northumberland. He went out to South Africa to take up a medical appointment at Grey's Hospital, Pietermaritzburg. He subsequently practised at Greytown, Natal, and on the Rand. Answering the call for military medical service, Major Sykes served as an Army doctor in the Gallipoli Expedition, in Egypt, and in East Africa.

Jan. 30th.

THE MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of the supporters of this institution, which seeks to care for poor persons convalescent or recovered from institutions for the insane, will be held on Wednesday next, March 12th, at 3 P.M., at the Skinners' Hall, Dowgate-hill, London, E.C. The chair will be taken by Mr. Stanley Keith, and among the speakers will be Dr. Norman Moore, Mr. A. Hill Trevor (member of the Board of Control), the Hon. John Mansfield (Lord Chancellor's Visitor in Lunacy), and Sir Rowland Blades, M.P.

Obituary.

HOWARD GRAEME GIBSON, M.R.C.S. ENG.,

MAJOR, R.A.M.C.

*An Appreciation by Colonel S. L. CUMMINS, C.M.G., A.M.S.,
Adviser in Pathology, B.E.F.*

MANY both in the Army and outside it will have heard with deep regret of the sad death from influenza, while on active service in France, of Major Howard Graeme Gibson, R.A.M.C. As his commanding officer at the time of his death and as a close personal friend, I feel constrained to record, even briefly, an appreciation of one whose ability and energy had already made valuable contributions to medical knowledge and who seemed certain to be destined to a brilliant career in the Corps.

Born in 1883, Gibson received his medical education at Guy's Hospital and entered the Royal Army Medical Corps on Jan. 28th, 1907, being promoted Captain on July 20th, 1910.

My first personal contact with him was when, early in the spring of 1914, he formed one of the "Specialist Class" in bacteriology at the promotion course at the Royal Army Medical College. Gibson entered into the work of



MAJOR HOWARD GRAEME GIBSON.

the laboratory with enthusiasm. It was a pleasure to have in the class a man with such keenness and avidity for work. From the very beginning he stood out as the possessor of exceptional ability, and the favourable opinion which I had formed of him was justified, when, at the end of the course, he made the highest marks in the "Specialist Examination," and by his success in other subjects as well as bacteriology succeeded in qualifying for a year's acceleration of promotion. A few months later the outbreak of war swept Gibson, like so many others, away from scientific work to take an active part in the great world drama. He joined the 12th Royal Lancers and with them proceeded at once to the front. The duties of a regimental medical officer with cavalry during the first phases of a war are such as to put the highest strain on initiative, endurance, and courage. This test Gibson met with his usual cheery energy and zeal. Throughout the retreat, throughout the advance, during the battles of the Marne and of the Aisne, and later, when the British Expeditionary Force was rapidly and secretly moved north to defend the Channel ports, he shared with the regiment its trials, hardships, dangers, and glories. Then, just when open warfare was changing to the war of trenches, and when the cavalry was helping, dismounted, to eke out our numerically

weak infantry, Gibson was severely injured by a shell-burst and was sent home, wounded, to England, where many months of hospital treatment were necessary before he could resume military duty. This injury and disability, so galling at the time to one whose whole soul was with the Army, proved a blessing in disguise, for it led to his resumption of the bacteriological work for which he was so well qualified.

Being quite unfit to resume active duty at the front, Gibson was now posted to the Vaccine Department of the Royal Army Medical College. Here, working under Lieutenant-Colonel D. Harvey, he had full scope for the application of his special knowledge. Although the claims of the Vaccine Department made necessary long hours of routine work, still, encouraged and aided by Harvey, he found time to devote himself to research on protection against bacillary dysentery. The result was a brilliant piece of work communicated to the *Journal of the Royal Army Medical Corps* of June, 1917, and which culminated in the production of Gibson's antidyenteric sero-vaccine. The severe reactions following the inoculation of unaltered dysentery bacilli had, for the most part, prevented the use of antidyenteric vaccines. Gibson, recognising the danger that the sensitisation of bacilli by the homologous antiserum might, while eliminating the severe reaction, eliminate also the value of the emulsion as antigen, conceived the ingenious idea of removing from the serum, by adsorption, all its "antibacterial" "immune bodies" while retaining the anti-endotoxic substances. Such a serum injected simultaneously with the appropriate dose of killed dysentery bacilli might be expected to prevent any severe local reaction, while still leaving the bacteria uninjured and capable of evoking in the body the production of agglutinins, opsonins, and other immune substances. Experiments on animals proved this conception to be correct, and the new principle was soon applied in practice, large supplies of the sero-vaccine being manufactured and sent abroad for use. While it is still too early to put forward final claims for the value of this sero-vaccine, all the reports received have so far been favourable, and there is every reason to hope that many lives will be saved by this means in the future.

In November, 1917, Gibson, now greatly improved in health, was passed "fit" for service in France, and joined Sir William Leishman as assistant adviser in pathology at headquarters. Here he threw himself with his usual ardour into statistical work connected with the effects of the T.A.B. inoculation and the use of antitetanic serum. His neat and thorough records are before me as I write, and will constitute a valuable source of reference in the future.

When in April, 1918, I succeeded Sir William Leishman as adviser in pathology my task was rendered easy by the fact that Gibson, who remained on as my assistant, had at his fingers' ends every fact connected with the office records and every detail of the work in hand. Then came the autumn epidemic of influenza, with its high death-rate and its many unsolved problems. Research was a matter of supreme necessity, and the number of men qualified to execute such work, and at the same time actually available for employment, was very small. I had decided that a research team was needed at once. It seemed waste to keep such a man as Gibson occupied with office records when knowledge, enthusiasm, and technical skill were so badly wanted. He welcomed my suggestion with the greatest delight, and I was able to include him as the senior officer of the team. His colleagues were Major F. B. Bowman, O.A.M.C., and Captain J. J. Connor, A.A.M.C., with whom was associated for clinical work Major C. E. Rundell, R.A.M.C. Helped generously by the provision of experimental animals through the Medical Research Committee, these officers were successful in transmitting the disease to monkeys and other animals by the inoculation of filtrates of infected material, thus confirming the work of C. Nicolle and Lebailly. They went further, and, employing the "Noguchi" method, were successful in obtaining cultures of a very minute filter-passing coccus which reproduces on inoculation into animals the symptoms of the disease. This work, carried out independently, has been completely confirmed by the publication by Sir J. Rose Bradford of similar observations made by Captain J. A. Wilson, R.A.M.C. At the very moment of success, when the work of months had at last reached its final stage, Major Gibson, who had been putting in long hours with his cultures in the laboratory, himself developed the disease in its severest form. Those who best knew him

will appreciate what the Army and the Corps have lost through his untimely death. He was a man who seemed destined to a career of distinguished success and utility. Lives such as his add fresh laurels to the splendid traditions of the Royal Army Medical Corps.

Additional Note by Major-General Sir WILLIAM LEISHMAN, K.C.M.G., C.B., F.R.S., K.H.P.

To the above appreciation of the late Major H. G. Gibson by Colonel Cummins, to every word of which I subscribe, I should like to add a few lines. Sudden death and the cutting short of what promised to be a brilliant career has, alas, been all too frequent during recent years, but the poignancy of sorrow and regret, for relatives and friends, remains as sharp as ever at each fresh loss. Of the many friends and comrades whose lives have been given for their country during the war there are none whom I shall miss more acutely than Major Gibson. It was indeed an irony of fate that he should have met his death at the very moment when his devoted investigations into the aetiology of the disease which killed him appeared likely to be crowned with a success which would have brought him well-deserved distinction.

No man had ever a better or more loyal colleague to work with, and in the months in which we were associated in France I not only formed the highest opinion of his work and judgment but also of his upright and sterling character. No one could have lived long in close association with him without realising the rare qualities of his nature and conceiving for him a deep and genuine affection. In illustration of this I may, perhaps, quote a sentence from a letter received from one of the colleagues associated with him in his last work. "He was one of the finest characters I have ever met, and never in the six months that I knew him did I hear him say anything against anyone."

One would like to think that it may perhaps be some small consolation to his widow and family to know that his brother officers will not readily forget their lost friend, and that a large number of them realise very clearly the great loss which the Corps has suffered in the early passing of a man whose work had already stamped him as destined to rise high in the line to which he had devoted himself so whole-heartedly.

War Office, Feb. 27th, 1919.

JOSEPH BALDWIN NIAS, M.D. OXON., M.R.C.P. LOND.,
LATE RADCLIFFE TRAVELLING FELLOW AT OXFORD.

Dr. J. B. Nias, who died at a nursing home on Feb. 20th at the age of 61, was a practitioner in whom erudition and scholarship were blended with the love of the practice of medicine. He was born at Bath on Dec. 13th, 1857, and was the son of Admiral Sir Joseph Nias. After five years spent at Winchester, he entered Exeter College, Oxford, in 1875, where a year later he was elected to an open scholarship in science. In 1879 he was in the first class in the final school of natural science, and subsequently entered at St. Bartholomew's Hospital, where he was afterwards house physician to Sir William Church. In 1882 he was elected Burdett-Coutts scholar and Radcliffe Travelling Fellow, and in addition to the study which this appointment entailed, set himself the task of becoming acquainted with the life of his benefactor and embodying this knowledge in a book, "Dr. John Radcliffe: a Sketch of His Life, with an Account of His Fellows and Foundations," which was published last year and reviewed in these columns at the time. In 1883 he proceeded to the B.M. degree at Oxford, and obtained the Membership of the Royal College of Physicians of London, graduating M.D. ten years later with the thesis on Mastication in Young Children. For many years Dr. Nias practised in South Kensington, and among the scholarly literary work which was so congenial to his bent of mind was the compilation of a report on the Greek Manuscripts contained in the Library of the Medical Society of London. This was published in 1905. His clinical writings covered such a wide field as the opsonic index in phlyctenular conjunctivitis and the successful treatment of streptococcal infection in the dog. All were characterised by qualities of detachment and freedom from bias as welcome as unusual. If only for this scientific detachment, Dr. Nias's place will be hard to fill.

Correspondence.

"Audi alteram partem."

THE MEDICAL PROFESSION AND THE TRADE-UNION QUESTION.

To the Editor of THE LANCET.

SIR,—It cannot be too widely known, as indicated in your leading article of March 1st, that the meeting held in Wigmore Hall on Feb. 23rd could not by any stretch of imagination be regarded as representative of the great mass of medical practitioners. The profession would be gravely misled if the decision there recorded went forth to the world without some explanation as to the conditions under which that vote was obtained.

The meeting was called by the Medico-Political Union—a body for some years committed to trades-unionism, and four-fifths of the audience were already whole-hearted supporters of that policy. In the article above referred to you deal with the arguments put forward by the principal speakers, and mention the fact that they were largely unanswered. This absence of criticism did not mean acquiescence and was mainly due to the fact that while the proposer and seconder of the resolution expended one hour in recommending their invitation to the whole profession to come under the trade-union umbrella, opponents, on the other hand, were only allowed five minutes to argue their side of the question and were then only accorded an impatient hearing with many interruptions, mostly irrelevant. Any real discussion was therefore impossible. It is clear, however, from the three mass meetings recently held in London, that the medical profession is at present politically in a ferment and has shown itself to be divided into two main lines of thought. One section still regards the practice of medicine as a vocation and not as a trade, and, in a materialistic age, aspires to the twin virtues of service and sacrifice; the other, represented by the Medico-Political Union, argues all questions of medical politics from the standpoint of profit and loss, and takes up a firm trade-union position on a basis of hard cash. To the practical medical politician, anxious that his profession should pull its weight in the national boat, it seems not impossible to correlate these divergent views and so find some common ground from which to watch the interests of the profession and to promote the public weal.

Would it not, then, be possible that from these two main bodies of medical opinion two councils be formed, each organised on its own lines to suit the special needs of its constituents, and when grave matters of medical politics are discussed they might meet in joint session and so bring to bear on the responsible authorities the full weight of their accumulated knowledge and experience. The Medical Parliamentary Committee has already among its members distinguished representatives of the trade-union doctrine, and I venture to suggest that this committee might well be made a rallying ground for all shades of medical opinion and form the nucleus of a general medical Parliament.

It is clear that medical men in contract practice must be treated by Government departments and Insurance Commissioners differently from what they have been in the past, their opinion must be sought, when medical questions are under discussion, and their views not only heard but attention must be paid to them. It is incontrovertible that panel practitioners have been treated infamously on occasion. Dr. E. H. M. Stancomb and Dr. J. A. Angus proved this conclusively at Wigmore Hall. Furthermore, members of the profession who are practising as free men, unshackled by Government contracts, must be enabled to make their weight felt in the councils of the nation and wherever their expert knowledge and experience may be of value.

In the future, and indeed in the present, no Minister of Health can afford to flout medical opinion, as have Government Departments in the past, and this must be made clear in unmi-takable terms. Fortunately, we have in the first head of the new Ministry a medical man who is alive to the value he is likely to gain by ready coöperation with his professional confrères. But the trade-union section must not imitate their less educated brethren by exhibiting the canker of unreasoning suspicion, but should take a broad and statesmanlike survey of the situation and unite with the Medical

Parliamentary Committee to form a really active and properly representative body for the greatest good of the greatest number.—I am, Sir, yours faithfully,

R. FIELDING-OULD, M.D., M.R.O.P., M.A.
William-street, S.W., March 4th, 1919.

CONTACT INFECTION OF CHICKEN-POX.

To the Editor of THE LANCET.

SIR,—In an article published in THE LANCET of Feb. 12th, 1918, on the aerial conveyance of infection of certain fevers I added a note on the contact infection of chicken-pox. For reasons stated the work on the aerial conveyance of infection was stopped, but that on the contact infection of chicken-pox continued, though necessarily slowly, until the hospital was utilised as an American war hospital.

In the note on chicken-pox contact infection 7 cases were reported as having passed through the ward without causing infection, the last case having been placed in the ward on the eighth day of the eruption. Since that time 5 more cases have passed through, and as the last marks a definite infecting period there seems to me some reason for recording them.

The ward chosen for the work was a scarlet fever one of 20 beds for small children, and no precautions were taken to avoid infection from the chicken-pox cases introduced. The ages of the unprotected children exposed to these five cases were: 1 year, 7; 2 years, 6; 3 years, 9; 4 years, 13; 5 years, 10; 6 years, 6; and 7 years, 2. The five patients introduced suffered from both chicken-pox and scarlet fever, one being introduced on the eighth day of the chicken-pox eruption, one on the seventh day, one on the sixth day, and two on the fifth day. Only one case was introduced at a time, and was kept in the ward until all the scabs had separated or longer, while no patient was discharged from the ward until more than 22 days had elapsed after the first exposure, many being kept much longer.

No infection arose from the first four cases (Cases 8, 9, 10, and 11), but the fifth (Case 12) infected three children.

8th Case.—Eighth day of chicken-pox eruption; very numerous scabs and numerous pustules. 19 other patients in ward—11 protected, 8 unprotected. No infection.

9th Case.—Seventh day; numerous scabs and pustules. 19 other patients in ward—5 protected, 12 unprotected, 1 doubtful. No infection.

10th Case.—Sixth day; numerous scabs and vesicles; a few pustules. 19 other patients in ward—3 protected, 10 unprotected, 1 doubtful. No infection.

11th Case.—Fifth day; moderate eruption, scabs and a few pustules. 19 other patients in ward—3 protected, 11 unprotected. No infection.

12th Case.—Fifth day; very abundant eruption, scabs and some pustules. 19 other patient in wards—7 protected, 12 unprotected. Infected three children in ward. Of the three infected children, one showed the eruption 14 days after the introduction of the infector to the ward, and the other two 16 days after. The infection was apparently by indirect contact, for the infector and the three infected were in bed for the first few days of exposure; the infector for the first five days, two of the infected for the first four days, and the other for the first three days. Further, the infected were all in beds at some distance from the infector.

Altogether 12 cases have passed through this ward, and though the number may seem small to some, it is to be remembered that chicken-pox is a very infectious disease, which seldom fails to cause infection in wards occupied by small children. There is, therefore, some reason to think that the contact infection of chicken-pox probably ceases about the end of the first week of the eruption or the beginning of the second. Further, that chicken-pox may certainly be infectious by contact on or before the fifth day.

I am, Sir, yours faithfully,

FREDERIC THOMSON.

North-Eastern Hospital, Tottenham, London, N.,
Feb. 27th, 1919.

"SHOCK" (SO-CALLED).

To the Editor of THE LANCET.

SIR,—A philosopher has written that "words shoot back upon the understanding of the wisest, and mightily entangle and pervert the judgement," and it would be hard to find even in theological and metaphysical controversy an instance of greater confusion than has arisen from the misuse of the word "shock." According to the dictionaries it denotes

"a sudden and more or less violent physical or mental impression: a startling agitation of the feelings." By some of the older writers, including, I think, Sir William Savory, it was reserved to denote the event which tended to produce a condition called collapse. More recently, shock has been defined as "the reaction of the central nervous system to abnormal or exaggerated afferent impulses"—i.e., to an event or series of events, which may or may not produce as an end-result a condition clinically serious. This is, no doubt, strictly correct, but the word is so generally applied to the condition of the organism when its "protective" reaction has failed, or has itself proved noxious, that it seems hardly practicable thus to alter the nomenclature.

Such being the case, I venture to suggest that at least by "surgical shock" should be understood only that condition which is a direct and immediate effect of some abnormal impulses from the periphery (as from a wound or in the course of operation), and is essentially a disturbance of the nervous system (Professor Bayliss's "primary shock"), with instant disturbance of the vital functions it controls. As an illustration I may mention that the most sudden and profound shock I have seen occurred in a healthy woman undergoing a minor operation on severance of a nerve which was in a state like that of bulbous nerve-ends in stumps. However (one may suppose because the clinical signs are similar), a variety of conditions are also called, or rather mis-called, "shock." Such are those due more or less indirectly to the "primary shock," but in addition often to other causes, chill, hæmorrhage, want of nourishment, &c., and now regarded as being essentially changes in the quality and distribution of blood ("secondary shock"), ("acæpnia"); and even, strange to say, to the effects of an overdose of morphine or chloroform, which so far from causing true shock tend to prevent it! These conditions should be termed "collapse," or at any rate, not "shock"; and it would certainly save much perplexity if every writer and speaker about to make use of the word "shock" would first try to define what he means by it.

I am, Sir, yours faithfully,
Fairhazel Gardens, N.W., March 3rd, 1919. J. D. MORTIMER.

HYPOTHERMIA IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—I have always looked upon the hypothermia which follows influenza as quite the most important and dangerous symptom. Indeed, I have thought it to be almost pathognomonic, and was quite unprepared to learn from Dr. Samuel West's letter in THE LANCET of Feb. 1st that it is not widely recognised. I have never even heard it disputed, and had taken for granted that it was familiar to practically every member of the profession. The high temperature, I have found, will usually go down of itself, but the low temperature which follows is far more dangerous and difficult to deal with, and renders the patient specially liable to complications. This fact is, of course, a strong argument against the use of any depressing remedies in the early stage. I believe that the treatment by antipyrin, which was at one time very prevalent, has been responsible for a great many fatal cases.

I am, Sir, yours faithfully,
Oakley-street, S.W., Feb. 7th, 1919. J. FOSTER PALMER.

BOOKS FOR SERBIA.

To the Editor of THE LANCET.

SIR,—May we appeal through your columns for books for Serbia? The Austro-Hungarians and the Bulgarians were at special pains to remove all means of education and culture in Serbia, and they destroyed her libraries after taking from them all that they themselves wanted. They also destroyed every printing press in the country. It is impossible to state in a phrase all that such losses must mean to a nation. But those of us who have imagination will hardly refuse a gift from our well-filled bookshelves. Books, old or new, of practically every kind, and in any language, are needed, and should be sent to Miss Waring, Hon. Organising Secretary for the Reconstruction of Serbian Libraries, Royal Society of Literature, 2, Bloom-bury-square, London, W.C.1. The name and address of sender should be given on the outside of the parcel.

Those who wish to help and who cannot give books are asked to send donations towards expenses, and for the

providing of books that may be missing from among the gifts. Cheques should be crossed "Messrs. Coutts & Co., A/C War Fund of the Entente Committee."

I am, Sir, yours faithfully,

OREWE,
Hon. Director of Foreign Affairs of the
Royal Society of Literature.
Feb. 27th, 1919.

BUYING PRACTICES.

To the Editor of THE LANCET.

SIR,—May I through your columns give a word of caution to the large number of practitioners now returning to civil life respecting the present value of practices. The position is quite different now from pre-war conditions, and before any practice is purchased very careful investigation is essential in order to arrive at its value. Many practices to my knowledge have been sold to unwary purchasers on the basis of last year's income, which is, in many cases, inflated by munition workers or epidemic fees, to the extent of 50 per cent. above the normal value. To be rushed into a purchase such as this spells disaster. Far better, before making any decision, to seek the advice of any of the old-established agents, who have a reputation to maintain and who can be relied on to advise after investigation as to the proper value of any practice.

I am, Sir, yours faithfully,
125, Strand, W.C., Feb. 25th, 1919. PERCIVAL TURNER.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. A. M. Pryce, R.A.M.C., was a student at Middlesex Hospital and qualified in 1903. He held appointments at the Leeds Sanatorium for Consumption and at the Leeds City Fever Hospital, afterwards becoming assistant M.O.H. for Leicester. At the time of joining the R.A.M.C. he was demonstrator of bacteriology at the University of Leeds. He died at Calais of bronchopneumonia.

Capt. F. B. Chenoy, I.M.S., was a student at the London Hospital and qualified in 1913. Shortly afterwards he joined the I.M.S.

Surg. Sub-Lieut. F. W. Lemarchand, R.N.V.R.

Surg.-Lieut. R. A. Hobbs, R.N., was a student at St. Mary's Hospital, London, and qualified in 1908. He held an appointment at the Royal Surrey County Hospital, Guildford, and, prior to joining the Royal Navy, was in practice at High Wycombe, Bucks, where he was honorary medical officer to the Memorial Cottage Hospital.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Warrant Telegraphist T. A. Payne, R.N.R., died of pneumonia, son of Dr. A. A. Payne, of Sheffield.

THE HONOURS LIST.

The following awards to medical officers (all members of the R.A.M.C. except where otherwise stated), in recognition of their gallantry and devotion to duty in the field, are announced. The acts of gallantry for which the decorations have been awarded will be given later:—

Bar to Distinguished Service Order.

Capt. (acting Lt.-Col.) J. H. Fletcher, D.S.O., M.C.; Maj. (temp. Lt.-Col.) F. C. Sampson, D.S.O.

Distinguished Service Order.

Capt. P. A. Ardagh, M.C., N.Z.M.C.; Temp. Maj. C. F. Knight; Maj. L. May, M.C., Aust. A.M.C.; Lt.-Col. S. Paulin, Can. A.M.C.

Second Bar to Military Cross.

Temp. Capt. G. O. F. Alley, M.C.; Lt. (temp. Capt.) W. J. Knight, M.C.; Temp. Capt. (acting Maj.) M. A. Power, M.C.

Bar to Military Cross.

Capt. (acting Maj.) J. B. Ovenshagh, M.C.; Temp. Capt. F. O. Olarka, M.C.; Temp. Capt. C. N. Coats, M.C.; Capt. (acting Maj.) F. F. Cuthill, M.C.; Temp. Capt. (acting Maj.) J. E. Davies, M.C.; Capt. F. F. Dunham, M.C., Can. A.M.C.; Capt. (acting Maj.) F. Gamm, M.C.; Capt. (acting Maj.) W. C. Hartgill, M.C.; Capt. (acting Maj.) R. A. Happle, M.C.; Temp. Capt. (acting Maj.) B. Knowles, M.C.; Temp. Capt. A. C. W. Knox, M.C.; Temp. Capt. (acting Maj.) H. D. Lane, M.C.; Capt. J. S.

Mackay, M.C., Aust. A.M.C.; Temp. Capt. J. D. MacKinnon, M.C.; Capt. (acting Maj.) W. A. Miller, D.S.O., M.C.; Capt. L. C. Palmer, M.C., Can. A.M.C.; Capt. J. G. Shaw, M.C., Can. A.M.C.; Capt. (acting Maj.) J. C. Spence, M.C.; Capt. D. G. K. Turnbull, M.C., Can. A.M.C.

The Military Cross.

Temp. Capt. (acting Maj.) J. R. P. Allin; Capt. A. F. Argue, Can. A.M.C.; Temp. Capt. (acting Maj.) B. W. Armstrong; Capt. F. G. Banting, Can. A.M.C.; Capt. J. H. Blair, Can. A.M.C.; Capt. E. J. Bradley; Capt. M. G. Brown, Can. A.M.C.; Capt. E. T. Cato, Aust. A.M.C.; Capt. H. T. Chatfield; Temp. Capt. T. Clapperton; Capt. (acting Maj.) H. R. Dive; Temp. Capt. R. Donald; Capt. L. H. Fraser, Can. A.M.C.; Temp. Capt. W. B. Gourlay; Temp. Capt. N. F. Graham; Capt. G. W. Grant, Can. A.M.C.; Temp. Capt. R. P. Hadden; Capt. J. M. Henderson, Aust. A.M.C.; Temp. Capt. A. Hunter; Temp. Capt. W. B. Jack; Temp. Capt. M. J. Johnston; Capt. C. T. Lewis, Can. A.M.C.; Temp. Capt. C. W. B. Littlejohn; Capt. I. H. Lloyd-Williams; Temp. Capt. A. Mason; Capt. H. C. Moses, Can. A.M.C.; Capt. J. A. Nicholson; Capt. K. C. Purnell, Aust. A.M.C.; Capt. A. M. Purves, Aust. A.M.C.; Temp. Capt. E. Rogerson; Temp. Capt. J. Scott; Temp. Capt. T. McC. Sellar; Capt. (acting Maj.) A. L. Shearwood; Capt. C. H. K. Smith; Capt. G. A. Smith, Can. A.M.C.; Capt. J. Stirling; Capt. J. T. Stirling, Can. A.M.C.; Capt. E. C. Weldon, Can. A.M.C.; Temp. Capt. G. B. Wilkinson.

The following awards to and promotions of medical officers, all members of the R.A.M.C. except where otherwise stated, in connexion with operations in Mesopotamia, are announced:—

C.B.—Lt.-Col. and Bt. Col. M. H. G. Fell, C.M.G.
C.B.E.—Lt.-Col. (temp. Col.) J. H. R. Bond, D.S.O.; Col. S. F. St. D. Green, A.M.S.; Lt.-Col. W. B. Lane, C.I.E., I.M.S.
O.B.E.—Maj. J. H. Brunsell, D.S.O.; Temp. Capt. W. A. Cardwell; Maj. (acting Lt.-Col.) G. B. Cathcart; Capt. R. A. Chambers, I.M.S.; Temp. Capt. L. W. Davies; Temp. Capt. G. H. Davy; Capt. J. R. Harris; Maj. H. L. Howell, M.C.; Capt. O. J. H. Little; Temp. Capt. G. S. Marshall; Capt. J. P. Mitchell; Capt. J. J. H. Nelson, M.O., I.M.S.; Capt. C. J. Penny; Capt. H. G. Robertson; Temp. Maj. M. E. Scott; Capt. F. T. H. Wood.
To be Major General.—Col. (temp. Maj.-Gen.) A. P. Blenkinsop, C.B., C.M.G., A.M.S.
To be Brevet Colonel.—Maj. and Bt. Lt.-Col. C. M. Goodbody, C.I.E., D.S.O., I.M.S.
To be Brevet Lieutenant-Colonel.—Maj. T. G. F. Paterson, D.S.O., I.M.S.; Maj. E. A. Roberts, D.S.O., I.M.S.
To be Brevet Major.—Capt. A. G. J. MacIlwaine, C.I.E.; Temp. Capt. H. H. Raw; Capt. A. Shepherd.
Military Cross.—Temp. Capt. J. A. G. Burton; Capt. C. R. Knowles; Capt. S. W. Rintoul.

BROUGHT TO NOTICE.

The names of the following medical officers in the Royal Air Force have been brought to the notice of the Secretary of State in respect of the valuable services they have rendered in connexion with the war:—

Capt. O. H. Gotch; Capt. R. Johnson; Surg.-Gen. Sir W. H. Norman, K.O.B.; Capt. C. R. M. Pattison; Capt. H. E. Whittingham.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeon-Lieutenant: J. M. Bickerton.

ARMY MEDICAL SERVICE.

Temp. Col. Sir Almoth E. Wright, K.B.E., C.B., relinquishes his commission and retains the rank of Colonel.
Temp. Col. Sir A. E. Garrod, K.C.M.G., (Lieut.-Col., R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

TERRITORIAL FORCE.

The undermentioned Lieutenant-Colonels, from the R.A.M.C. (T.F.), to be Colonels: A. E. L. Wear, C. Averill, H. D. Brook, R. Pickard (acting Col.), A. B. Soltan, F. Kelly (acting Col.), L. J. Blandford (acting Col.), J. Clay (acting Col.), P. C. Burgess, H. H. C. Dent, G. H. Edington, J. M. Rogers-Tillstone.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. J. E. Brogden is placed temporarily on the Half Pay List on account of ill-health contracted on active service.

Lieut.-Col. W. L. Steele, C.M.G., to be acting Colonel whilst employed as Assistant Director of Medical Services of a Division.

Temp. Maj. C. V. Mackay and Majors F. J. Garland, G. G. Tabuteau, and J. M. B. Rabbily relinquish the acting rank of Lieutenant-Colonel on re-posting.

To be acting Lieutenant-Colonels whilst specially employed: Maj. A. C. Osburn, Temp. Capt. N. R. Hunt.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Temp. Maj. H. M. Chasseaud, Majors L. V. Thurston, A. O. H. Gray, Capt. (acting Major) G. F. Allison, Capt. B. A. Odium.

Capt. and Bt. Major J. Gilmour retires receiving a gratuity.

Relinquishing the acting rank of Major on re-posting: Capt. J. P. Litt, C. J. O'Reilly; Temp. Capt. H. B. Atlee, R. S. Frew, J. A. Jones, F. M. Heath, D. M. Ross, H. D. Ledward, J. L. Gordon, W. Anderson, C. A. H. Gee, E. L. M. Hackett, B. H. Barton, S. J. Rowntree, H. W. Gabe, J. R. Craig, W. H. W. Attlee, A. M. Caverhill.

Temp. Maj. G. P. Mills (Capt. R.A.M.C., T.F.) relinquishes his temporary commission.

To be acting Majors: Capt. W. D. Anderton, W. W. MacNaught, A. L. Aymer; Temp. Capt. A. Mathieson, D. Cowin, W. M. Oakden, T. Winning, A. T. W. Forrester, N. B. Kendall, A. C. Renton, A. Felling, A. Farquhar, A. Grant, W. E. R. Dimond, A. Scott, S. H. Pickin, F. O. Clarke, A. V. Craig, J. Morrison, B. Pickering, H. R.

Davies, J. G. Moseley; while specially employed: J. F. Venables, A. H. Thomas, S. A. W. Munro.

Capt. E. L. Puddicombe relinquishes the acting rank of Major on re-posting.

Temporary Lieutenants to be temporary Captains: M. P. Thomas, G. R. Bickerstaff, W. P. Philip, C. I. Ilderton, J. W. Robertson, C. M. Bradley, C. Fletcher, E. J. Blewitt, H. E. Kitchen, H. G. G. Nelson, H. C. Attwood, J. D. McKelvie, A. M. Clare, F. L. Rigby, W. Rigby, B. G. Brooke, H. K. Waller.

Officers relinquishing their commissions: Temp. Majors E. D. Hancock (on ceasing to be employed with Guildford War Hospital, and retains the rank of Major), G. H. W. Humphreys and G. F. B. Simpson (retain the rank of Majors); Temp. Capt. J. L. Menzies, J. Lamont (and are granted the rank of Major); Temp. Capt. retaining the rank of Captain: A. N. E. Rodgers, A. B. Northcote, H. Peters, T. B. Jobson, A. Drouin, T. S. G. Martin, E. L. MacKenzie, H. Boyers, T. D. Miller, J. V. Brown, H. Craswell, A. W. Allan, J. H. O'Reilly, R. N. Berman; Temp. Capt. R. S. Topham (on transfer to the R.A.F.); E. B. T. Nutball (late temporary Captain, is granted the rank of Captain); Temp. Hon. Capt. H. F. Bold-Williams (and retains the honorary rank of Captain); Temp. Lieut. J. M. Flavelle (and retains the rank of Lieutenant); Temp. Hon. Lieut. J. O'B. Hodnett (and retains the honorary rank of Lieutenant).

SPECIAL RESERVE OF OFFICERS.

Captains relinquishing their commissions and retaining the rank of Captain: A. C. Court, N. L. Joynt.

TERRITORIAL FORCE.

Officers relinquishing the acting rank of Lieutenant-Colonel on ceasing to be specially employed: Capt. H. F. Wilkin, Majors A. Callam, E. Turton and A. A. Martin.

Officers to be acting Lieutenant-Colonels whilst specially employed: Majors J. Scott and W. A. Thompson, Capt. (acting Major) D. G. Rice-Oxley.

Capt. (acting Major) H. J. Dunbar to be acting Lieutenant-Colonel whilst specially employed.

Captains to be acting Majors whilst specially employed: J. A. Willett, C. D. Law, H. Henry, H. P. Ashe, J. G. Hill, F. S. Bedale, A. M. Gibson, G. E. J. A. Robinson, J. G. Morgan.

Capt. (acting Majors) A. M. Johnson, M.C., A. G. T. Hanks, J. W. Dale, M.O., and W. H. Milligan, and Capt. (acting Lieut.-Col.) G. H. Spencer relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Major) C. D. S. Agassiz is granted the pay and allowances of his acting rank.

Capt. B. H. Bingley and T. R. Bowen relinquish their commissions and retain the rank of Captain.

1st London Sanitary Company: Lieut. S. O. Riggs to be Captain.

2nd London Sanitary Company: Capt. (acting Major) J. Chalmers relinquishes his acting rank on vacating the appointment of Deputy Assistant Director of Medical Services; Lieut. D. M. Nell to be Captain.

2nd London General Hospital: Capt. A. S. Daly is seconded for service with a Military Hospital.

4th Northern General Hospital: Capt. G. J. R. Lowe to be acting Major whilst specially employed.

2nd Eastern Hospital: Majors T. H. Ionides and W. Broadbent are restored to the establishment.

1st Western General Hospital: Capt. (Bt. Major) R. E. Kelly is restored to the establishment.

1st Northern General Hospital: Capt. N. Hodgson to be acting Major whilst specially employed and to remain seconded.

5th Southern General Hospital: Capt. C. H. Saunders to be acting Major whilst specially employed.

3rd London General Hospital: Capt. S. M. Smith is restored to the establishment.

2nd Western General Hospital: Capt. G. Wright to be acting Major whilst specially employed and to remain seconded. Capt. (acting Major) G. Wright relinquishes his acting rank on ceasing to be specially employed.

2nd Scottish General Hospital: Lieut.-Col. Sir J. Fayrer, Bt., is retired on completion of tenure of command and retains his rank with permission to wear the prescribed uniform.

TERRITORIAL FORCE RESERVE.

Major A. Callam, from 2nd East Lancs. Field Ambulance, to be Major.

Capt. A. M. Johnson, from 3rd East Lancs. Field Ambulance, to be Captain.

Capt. J. W. Dale, from 3rd Welsh Field Ambulance, to be Captain.

INDIAN MEDICAL SERVICE.

Major-Gen. G. G. Giffard has been appointed an honorary surgeon to the King, vice Surg.-Gen. T. Grainger.

Temporary Lieutenants to be temporary Captains: P. V. R. Murty, D. C. McNair, P. M. Masina.

Lieut. R. A. Murphy relinquishes his temporary rank.

ROYAL AIR FORCE.

Medical Branch.—W. F. Jones (temp. Surg.-Lieut., R.N.) is granted a temporary commission as Captain.

R. S. Topham (temp. Capt., R.A.M.C.) is granted a temporary commission as Captain.

Capt. R. D. Goldie (Capt. R.A.M.C., S.R.) relinquishes his commission on ceasing to be employed.

PROMOTION IN THE R.A.M.C. (TERRITORIAL).

Sir F. Blake having asked the Secretary for War whether he would state the number of lieutenant-colonels and majors, Royal Army Medical Corps (Territorial Force), who had been promoted since the promotion or seniority list was compiled last year, Captain Guest replied: Twelve lieutenant-colonels, R.A.M.C. (T.F.), have been selected for promotion under the rules governing authorised increases in the establishment. (See under Army Medical Service, Territorial Force, above.) It is anticipated that the publication of the names of majors selected for promotion to the rank of lieutenant-colonel will take place within the next three weeks.

Medical News.

THE FELLOWSHIP OF MEDICINE.—The Fellowship of Medicine has arranged with the majority of the medical schools in London and other hospitals for an emergency post-graduate course of three months for qualified medical officers from the R.N., R.A.M.C., and R.A.F., from the Dominions and the United States and Allies, admitting to their general practice, including clinical instruction in the wards and out-patient departments, clinical lectures and demonstrations, post-mortem demonstrations, laboratory work, &c. The London medical schools and hospitals available for emergency post-graduate study, and the special courses already in progress, are given in the following list:—

Medical schools.—St. Bartholomew's Hospital and College, West Smithfield, E.C.1; St. George's Hospital, Hyde Park Corner, S.W.1; Guy's Hospital, St. Thomas's-street, London Bridge, S.E.1; King's College Hospital Medical School, Denmark Hill, S.E.3; London Hospital, Mile End, E.1; London (Royal Free Hospital) School of Medicine for Women, 8, Hunter-street, Brunswick-square, W.C.1; Middlesex Hospital, Bouverie-street, W.1; St. Thomas's Hospital, Albert Embankment, Westminster Bridge, S.E.1; University College Hospital Medical School, Gower-street, W.C.1; Westminster Hospital, opposite Westminster Abbey, S.W.1.

Special hospitals.—Cancer Hospital, Fulham-road, S.W.3; *Chelsea Hospital for Women, Arthur-street, Chelsea, S.W.; Hospital for Children, Great Ormond-street, W.C.1; National Hospital for Diseases of the Heart, Westmoreland-street, W.1; *National Hospital for the Paralysed and Epileptic, Queen-square, W.C.1; Queen's Hospital for Children, Hackney-road, Bethnal Green, E.2; Prince of Wales General Hospital (N.E. London Post-Graduate), Tottenham, N.15; St. Mark's Hospital for Diseases of the Rectum, City-road, E.C.1; St. Peter's Hospital, Henrietta-street, Covent Garden, W.C.2; *West London Hospital (West London Post-Graduate College), Hammersmith-road, W.6.

*Members wishing to attend these hospitals must ask for special tickets. **Special courses already in progress.**—King's College Hospital Medical School, Jan. 24th–March 29th; National Hospital for the Paralysed and Epileptic, Feb. 10th–April 10th; London (Royal Free Hospital) School of Medicine for Women, special 14 days' course, March 15th–31st; *Medicine and Surgery of Liver and Gall-Bladder, May 5th–16th; *Diseases of the Thyroid and Parathyroids; West London Post-Graduate College, Feb. 17th–April 17th. At the North-East London Post-Graduate College, National Hospital for Diseases of the Heart, and Cancer Hospital, special lectures will be arranged.

Time tables and syllabuses of the various courses and daily programmes will be posted in the entrance hall at 1, Wimpole-street, and can be seen at any time. Arrangements are being made for a definite course of daily lectures and demonstrations in general and special subjects at the same address. As soon as sufficient applications are received a detailed programme will be published and sent to applicants. The honorary secretaries of the Fellowship are Mr. Philip Franklin, Mr. J. Y. W. MacAlister, and Mr. Herbert J. Paterson. Tickets for the whole course, or for one or two months, at the rate of £3 10s. for each month, can now be obtained from Miss Willis, secretary to the Fellowship, who is in attendance daily from 10 A.M. to 5 P.M., and to whom all inquiries can be addressed at 1, Wimpole-street, London, W.1. The card of membership for any period of the course admits the holder to any, or all, of the hospitals available, including their special courses.

ROYAL INSTITUTION.—Captain G. P. Thomson will deliver his postponed lecture on "The Dynamics of Flying" on March 10th, at 3 o'clock.—Professor A. Keith will deliver a lecture on March 14th, at 5.30 P.M., on the Organ of Hearing from a New Point of View.

RÖNTGEN SOCIETY.—Professor W. M. Bayliss will deliver the second "Silvanus Thompson Memorial Lecture" in May next. Members requiring invitations for friends are requested to make application to the Honorary Treasurer, 33, Newton-street, London, W.C.2.—A joint meeting of the Röntgen Society and the Faraday Society is being arranged for the purpose of a joint discussion on "Radiometallurgy" (the radiography of metals by X rays).

BRITISH SCIENTIFIC PRODUCTS EXHIBITION, 1919.—The King has consented to act as President of the British Scientific Products Exhibition, 1919, which will be held at the Central Hall, Westminster, during the month of July. The President of the exhibition is the Marquess of Crewe, K.G., and Professor R. A. Gregory is chairman of the organising committee. The British Science Guild has been encouraged to organise this exhibition by the success which attended that held at King's College last summer and the more recent exhibition at Manchester. Now that many inventions can be shown which could not be put before the public during the war, there is every prospect that this year's exhibition will be even more successful than its predecessors. The objects of the exhibition will be to illustrate recent progress in British science and invention and to help the establishment and development of new British industries. Such an exhibition

will enable new appliances and devices to be displayed before a large public, and will provide progressive manufacturers with an opportunity of examining inventions likely to be of service to them, thus serving as a kind of clearing house for inventors and manufacturers, as well as illustrating developments in science and industry. The exhibition will include sections dealing with chemistry, metallurgy, physics, agriculture and foods, mechanical and electrical engineering, education, paper, illustration and typography, medicine and surgery, fuels, aircraft and textiles. Firms desirous of exhibiting are invited to communicate with the organising secretary, Mr. F. S. Spiers, 82, Victoria-street, London, S.W.1.

THE FACULTY OF INSURANCE: ANNUAL PUBLIC CONFERENCE.—This conference is to be held in the Central Hall, Westminster, on Friday, April 4th, morning and afternoon. Sir L. Worthington Evans, M.P. (Pensions Minister), will speak on "The Training and Treatment of Disabled Service Men" and Captain J. O'Grady, M.P., will open the discussion. Sir Walter Fletcher (secretary to the Medical Research Committee) will speak on "Medical Research and the State" and Major-General Sir William Leishman will open the discussion on this subject. Mr. J. H. Thomas, M.P., will speak on "The Urgent Necessity for an Increase in National Health Insurance Benefits" and Mr. John Hodge, M.P., will open the discussion. The chair will be successively occupied by Mr. P. Rockliff, President; Sir Kingsley Wood, M.P., chairman; and Mr. W. S. Bennett, vice-chairman of the Faculty. A dinner in connexion with the conference will be held the same evening.

DONATIONS AND BEQUESTS.—By the will of the late Mr. Henry Alfred Jones, of Eastbourne, the testator left £500 to the London Hospital, and £250 each to Guy's Hospital, Dr. Barnardo's Homes, St. John's Hospital for Skin Diseases, St. Peter's Hospital for Stone, Covent-garden, Westminster Hospital, the Royal Hospital for Incurables, Putney, the City of London Hospital for Diseases of the Chest, the Brompton Hospital for Consumption, Sir William Treloar's Crippled Children's Home at Alton, the Queen's Hospital for Children, Hackney-road, the Cancer Hospital, Fulham, the Royal National Orthopaedic Hospital, the Royal London Ophthalmic Hospital, the London Lock Hospital, the Surgical Aid Society, the National Hospital for Paralysed and Epileptic, and the Princess Alice Memorial Hospital, Eastbourne.

BRIGHTON AND WOUNDED SOLDIERS.—Brighton was one of the first towns to have established in it a hospital for wounded soldiers, and since September, 1914, when the 2nd Eastern General Hospital was opened, the institutions for the care of the sick were of rapid growth. The smaller hospitals, however, are now gradually being closed down, cases that arrive now—like a convoy of 251 from Salonika that reached Brighton on the last day of February—being received at the larger institutions. Taking the four and a half years of war right through, so it was announced at the annual meeting of the Brighton Ambulance Division of the St. John Ambulance Brigade, no fewer than 32,000 wounded soldiers were brought to Brighton, and it is to the credit of all concerned that not a single mishap occurred in detaining them and removing them to hospital. 85 convoys were dealt with in 1918, these comprising 8945 cot cases and 4850 sitting cases.

THE MINISTRY OF HEALTH BILL AND IRELAND.—It is a source of sincere satisfaction, an Irish correspondent writes, that the President of the Local Government Board (Dr. Addison), who flatly refused last session to allow Ireland to come under the advantages of the new health measure, and who even early this session announced that the Bill would not extend to Ireland, has, by the weight of facts as to the backward public health conditions of that country, been compelled to give way. The North of Ireland. Members substantiated in the House of Commons all the facts that have appeared in your columns; and what has specially impressed M.P.'s is the wretched permissive way in which any public health reforms have been applied to Ireland. The whole value of the notification of tuberculosis was rendered abortive through a clause by which a member of a family—no matter how far advanced the disease—could claim that his doctor should not notify him provided he slept alone in a room. It is difficult to say yet whether the English Bill will be modified so as to make it applicable to Ireland, or whether—as in the case of Scotland—a separate measure will be passed. In the meantime schemes are being prepared by the Irish Local Government Board and by the Insurance Commissioners, which are markedly antagonistic bodies. Three things are needed: (1) the medical profession will insist on being consulted; (2) strong advisory committees will need to be formed; and (3) an English or a Scotch medical officer of health should be appointed to take charge of the scheme in Ireland, where we have really no one conversant with the practical details of modern public health as it exists in either of those countries.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Ministry of Health Bill.

THE proceedings in Committee on the Ministry of Health Bill will commence on Tuesday next. It comes before one of the Standing Committees of the House of Commons.

Medical Treatment of Children in Ireland.

MR. MACPHERSON, Chief Secretary for Ireland, on March 5th introduced in the House of Commons a Bill designed to make provision for the medical treatment of children attending elementary schools in Ireland and for other matters incidental thereto. It was read a first time. The title of the Bill is Public Health (Medical Treatment of Children) (Ireland) Bill.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 26TH.

Industrial Fatigue Research Board.

Captain LOSEBY asked the Minister of Labour why women were not represented on the recently appointed Industrial Fatigue Research Board.—MR. FISHER (President of the Board of Education) replied: It was recognised when the board was first established jointly by the Medical Research Committee and the Department of Scientific and Industrial Research that its original membership would need to be extended. Additional members have, in fact, been appointed on two occasions. Women investigators have been appointed and employed from the beginning, and the inclusion of women on the board was intended from the first. Particular appointments are at present under consideration by the Medical Research Committee and the Advisory Council for Scientific and Industrial Research. It is probable that an announcement will shortly be made.

Grants to Panel Practitioners.

MR. KENYON asked the Secretary to the Local Government Board whether it was proposed to make any special grants in respect of the medical officers of institutions approved under the National Insurance Acts on the lines of the grants to medical practitioners whose incomes did not exceed £500 per annum of 12½ per cent., and between £500 and £1000 per annum of 10 per cent., or of the additional grant to medical practitioners who undertook the supply of medicines to the persons on their lists which represented about 5d. per insured person on such lists, where the certified expenditure of such institutions had not been received from the respective Insurance Committees in whose area or areas such institutions were approved; if so, whether such a grant was intended to be paid to institutions in respect of the extra cost of medicines supplied to insured persons on the lists of institutions; and, if not, why institutions were specifically excluded therefrom in view of the fact that they undertook the supply of medicines to all the persons on their lists.—Major ASTOR answered: From the terms of the question the honourable Member would appear to be under a misapprehension as to the basis and purpose of the war allowances to which I understand him to refer. These were granted in response to application made to the Chancellor of the Exchequer by the Insurance Acts Committee of the British Medical Association in respect only of practitioners working under contract with the Insurance Committees in England, Scotland, and Wales, and the selection of the particular practitioners who were to receive the allowances depended in no way whatever upon any considerations of a rise in the price of drugs, but upon two factors only—namely, the amount of the individual practitioner's income and the rural or semi-rural nature of the area in which his practice lay as affecting the amount of travelling involved. Doctors in the employ of institutions approved under Section 15 (4), to which the honourable Member's question alone refers, were not included in that application to the Chancellor of the Exchequer, and were not therefore covered in the grant given in response thereto. In reply to the concluding paragraph, it will be seen from the foregoing that the honourable gentleman is incorrect in speaking of this latter class of doctors having been excluded by the Department from the war allowances referred to, and also in suggesting that the supply of medicines by the said institutions affords any ground for their inclusion. In reply to the second paragraph of the question, I can only say that the arrangements for the work and payments of such doctors are so different from those of the doctors under contract with the Insurance Committees that I am unable to say whether or not any of such practitioners could possibly be regarded as eligible for those allowances without first considering in consultation with the Treasury the precise circumstances of any particular doctor by or in respect to whom the application might be made.

THURSDAY, FEB. 27TH.

Women and Methylated Spirits.

Major NALL asked the Home Secretary whether his attention had been drawn to the increased drinking of methylated spirits amongst women; and what steps he proposed to take to discourage or prevent this regrettable practice.—MR. SHORTT replied: I am aware that cases of methylated spirit drinking have recently been attracting public attention. It is unfortunately not a new evil. The question whether further preventive measures are practicable has received most careful consideration, but it is to be doubted whether any means can be found of protecting against themselves those addicted to the habit.

Patent Medicines.

Sir H. NORMAN asked the Parliamentary Secretary to the Local Government Board whether his attention had been called to the increase of advertisements of patent and proprietary medicines of the classes described as contrary to the public interest by the Report of the Select Committee on Patent Medicines, 1914; whether a Bill to give effect to the recommendations of that committee had been drafted; and whether it was the intention of the Government to introduce such a Bill.—Major ASTOR answered: My attention has been called to the advertisements referred to as contrary to the public interest in the Report of the Select Committee of 1914. By the Venereal Disease Act, 1917, effect was given to the recommendation in paragraph 573 of the report of that committee, and it was enacted that medicines and medicaments for the prevention or cure of venereal diseases should be prohibited. My right honourable friend has the whole question under consideration.

Influenza.

Replying to Sir H. NORMAN, Major ASTOR (Parliamentary Secretary to the Local Government Board) said: Researches into various points relating to the nature and cause of influenza and the measures which are of practical value in preventing its spread are being actively undertaken by my own Department, by investigation of the Medical Research Committee, and by many other observers in different countries. The present position of these researches was referred to in the Memorandum on Prevention of Influenza issued by the Local Government Board last week. The electrolytic disinfectant referred to as produced in large quantities by the authorities of the borough of Poplar is supplied by the public health department of the Poplar borough council for use, after suitable dilution, as a gargle or for irrigation of the nose. A weak solution of chlorime, such as is made by this disinfectant, or the weak solution of permanganate of potash recommended in the Board's circular or other similar antiseptics, are of value in the prevention of influenza when used as a gargle or for nasal irrigation. Local authorities are authorised to provide such solution within their districts with the Board's sanction, which was signified in the circular letter to local authorities of Nov. 4th, 1918.

Influenza Patients in the Army.

VISCOUNT WOLMER asked the Secretary for War whether he was aware that soldiers who reported sick with influenza were obliged to parade at 7 A.M. outside the medical officer's hut and, having been diagnosed as suffering from influenza with a high temperature, had to return to their quarters, pack up their kit, return it to store, parade again, and march to hospital; and whether, in view of the high death-rate among influenza cases in the Army, he would consider the advisability of altering this procedure.—Captain GUEST (for Mr. CHURCHILL) answered: I am not aware that such a procedure is followed, but telegraphic instructions have been issued to all military commands in case the practice does exist in any unit.

Discharged Tuberculous Soldiers.

Replying to Lord H. CAVENDISH-BENTINCK, who asked whether work centres and village settlements for tuberculous ex-soldiers would be extended, Major ASTOR stated that the Insurance Commissioners and the Local Government Board had been and were most anxious to encourage under suitable conditions and on approved standards of efficient working such centres or colonies as were referred to.

London County Mental Hospitals.

Sir CYRIL COBB asked the Secretary for War whether he could indicate at what date the three London county mental hospitals at Epsom, which the London County Council had voluntarily placed at the disposal of the War Department for use as war hospitals—viz., the Horton Hospital, the Manor Hospital, and the Ewell Colony—would be returned to the Council for renewed use for the accommodation of civilian mental cases for which they were seriously needed; whether he would take steps to secure that these hospitals were demobilised and restored to the Council at the earliest possible moment; and whether he could indicate at what date the Maudsley Hospital buildings at Denmark Hill, which were taken over from the London County Council

by the War Department at the commencement of the war and were now being used as a neurological clearing hospital, would be returned to the Council for use for the purpose for which the buildings were designed.—Captain GUEST (for Mr. CHURCHILL) answered: The Manor Hospital will be closed from March 15th next. Every effort is being made to close the other hospitals as early as possible, but it has to be remembered that the sick are still being returned from France at the rate of 1000 a day, and a very large number required special treatment. As regards the Maudsley Hospital buildings, this hospital is a neurological centre and a busy one, and, so far, it has been impossible to reduce its activity. Efforts are, however, being made to find another hospital into which the whole centre can be moved, and it is hoped that it will be possible to do this and to close the Maudsley Hospital at an early date.

Medical Women and the War Office.

Mr. RAPER asked the Secretary for War whether, in view of the Government's undertaking to remove all existing inequalities in the present law as between men and women, he would give his sympathetic consideration to support the claim of women doctors serving under or attached to the War Office for recognition of the rank and privileges to which they were entitled.—Mr. CHURCHILL replied: The general policy of the Government in seeking to remove the existing inequalities between men and women cannot be held to commit them to immediate action in this sense in every sphere, and I am not prepared to introduce legislation during the present session on the point raised by my honourable friend.

Promotions in the R.A.M.C.

Sir P. MAGNUS asked the Secretary for War whether he would give the number of members of the Royal Army Medical Corps who, having the rank of major, had been promoted to that of lieutenant-colonel; and whether, as regards such promotions, due consideration had been given to the character of the duties performed by members of the Royal Army Medical Corps who had given their services to the sick and wounded of His Majesty's Forces in our home hospitals.—Captain GUEST (on behalf of Mr. CHURCHILL) answered: If, as I presume is the case, my honourable friend is referring to officers of the regular Royal Army Medical Corps, the present number of substantive lieutenant-colonels is 237, and promotion to the rank is made by selection based on the records of the whole service of the officers. If the question refers to acting promotion among Regular, Special Reserve, Territorial Force, and temporary officers, such promotion is governed by the establishments of the various units in which officers are serving, and the appointments are made by the local authorities concerned from the officers considered most suitable for the duties required.

Medical Officers in Army of Occupation.

Colonel BURN asked the Secretary for War whether medical officers who after general demobilisation volunteered to serve with the Army of Occupation would be allowed to bring their wives to the towns in which they were serving.—Captain GUEST (for Mr. CHURCHILL) replied: This point is being considered. I will let my honourable and gallant friend know the decision arrived at.

R.A.M.C. Officers and Government Employment.

General CROFT asked the Parliamentary Secretary to the Local Government Board what steps were being taken to secure that doctors who had served in the Royal Army Medical Corps should have first claim for medical employment in Government offices or in part-time work; and whether he would give an assurance that such members of the medical service who had made considerable professional sacrifices would have due consideration for any such appointments.—Major ASTOR answered: A list is kept at the Board's offices of medical officers who have served in the R.A.M.C., Naval, or Royal Air Force Medical Services and who wish to apply for medical employment on the Board, and due consideration will be given to such officers when medical appointments are being made.

General CROFT asked the Parliamentary Secretary to the Ministry of Labour whether the officers' employment bureau was placed in touch with the various Government departments with a view to finding employment for medical officers who had served in the war.—Mr. WARDLE answered: It is presumed that the honourable and gallant Member refers to the Appointments Department of the Ministry of Labour. The Ministry of National Service is responsible for the demobilisation of qualified medical men in His Majesty's Forces. Medical men are registered and informed of openings for Government or private appointments.

Rabies in Cornwall and Devon.

In the course of a debate on supplementary estimates for the Board of Agriculture and Fisheries, Sir A. GRIFFITH BOSCAWEN (the Parliamentary Secretary to the Department) said that there had been 119 cases of rabies—95 in Devonshire and 24 in Cornwall. It had been necessary to impose very

severe restrictions. He could give no date when the restrictions would be taken off. They had got to wait until the disease was stamped out. He believed that the general rule was that restrictions could not be taken off in any case until at least six months after the last reported case. There was a case reported only a few days ago.

MONDAY, MARCH 3RD.

Spirits for Medicinal Uses.

Replying to Sir J. HARMOOD-BANNER, who asked regarding the releases of spirits from bond to meet cases where these were ordered by medical men, Mr. MCCURDY (Parliamentary Secretary to the Ministry of Food) said: The increase in the percentage of spirits permitted to be withdrawn from bond for home consumption—namely, 50 per cent. of the quantity withdrawn in 1916 to 75 per cent. of that quantity—operates as from Feb. 24th. The additional quantity permitted to be withdrawn for the unexpired one-tenth of the excise year—namely, from Feb. 24th to March 31st is one-tenth of the additional 25 per cent. The Cabinet and the Food Controller have at present no reason to suppose that these additional releases will not prove reasonably sufficient for the needs of the public.

Medical Inspectors of Home Office.

Sir P. MAGNUS asked the Home Secretary how many members of his staff were engaged in the medical inspection or treatment of persons employed in factories or workshops, or otherwise engaged in matters relating to such doctors.—Mr. SHORTT replied: I understand the honourable baronet to refer only to the medical side of the Factory Department. The present established staff, which numbers about 200, includes three medical inspectors who supervise the work of the factory certifying surgeons. There are also three temporary women inspectors with special hospital training.

Medical Women and War Office Employment.

Major TUDOR-REES asked the Chancellor of the Exchequer whether the women doctors serving at the military hospital, Endell-street, London, drew their pay and allowances under the Royal Warrant, were paid from Army funds by the command paymaster, were appointed by the War Office, and were under the command of the Deputy Director of Medical Services, London District; whether, for purposes of pay, they were graded according to the ranks of the Royal Army Medical Corps; if so, whether they came within the terms of Schedule E of the Income-tax Return as persons who had served during the year as members of any of the naval or military forces of the Crown, and as such liable only to the service rate of income-tax; whether up to now they had not been allowed the relief, although the Income-tax Commissioners determined that they were entitled to it; and whether he would give instructions for the granting of the relief as from the year 1914.—Mr. BALDWIN (Secretary to the Treasury) (on behalf of Mr. A. CHAMBERLAIN) answered: The ladies employed upon medical duties as described in the question are civilian medical practitioners and are not serving as members of any of the naval or military forces of the Crown. As regards the latter part of the question the honourable Member is under a misapprehension. An appeal was lodged on behalf of these doctors to the District Commissioners of Taxes, whose decision was that they were not entitled to the service rate of income-tax.

Dental Surgeons and the Army Gratuity.

Replying to Mr. PERKINS, Mr. CHURCHILL (Secretary for War) said that the gratuity provided under Pay Warrant, 1914, paragraph 497, was not payable to dental surgeons. Dental surgeons had been engaged under a special contract which did not carry a right to the Pay Warrant gratuity, but as a special concession a gratuity of £50 for each year, or part of a year, had recently been approved for these officers.

TUESDAY, MARCH 4TH.

Glen Lomond Sanatorium.

Replying to Colonel Sir A. SPROT, Mr. CHURCHILL (Secretary for War) stated that orders had been given for the evacuation at once by the War Department of the Glen Lomond Sanatorium, Fife, the number of patients there being now sufficiently reduced to admit of it being handed back for the treatment of tuberculosis.

Medical Inspection in Factories.

Replying to Sir P. MAGNUS, Mr. SHORTT (Home Secretary) stated that he would consider the advisability of transferring the medical inspection or treatment of persons employed in factories or workshops to the charge of the new Ministry of Health.

Broncho-Pneumonia in the Army.

Replying to Lieutenant-Colonel W. GUINNESS, Mr. CHURCHILL (Secretary for War) said the number of admissions to hospital from broncho-pneumonia among the British Expeditionary Force in France during the week ended Feb. 8th was 238 and the number of deaths was 84.

Strict instructions were issued in October last as to the isolation of broncho-pneumonia cases, and he was informed as a result of special inquiry that these instructions had been strictly complied with. He would be glad to investigate any specific instances of casualty clearing stations or general hospitals where these cases were not properly isolated.

Medical Men in Military Service.

In answer to Mr. LYLE, Mr. CHURCHILL said that there were 11,193 medical men and 23,931 nurses employed in the Army on Nov. 11th last, and 9593 medical men and 20,141 nurses were at present serving. The proportion of doctors in November was 1 to 318 all ranks, and was now 1 to 314 all ranks. The proportion of nurses in November was 1 to 148 all ranks, and was now 1 to 149 all ranks. He would point out that the demobilisation of medical men and nurses bore little relationship to the demobilisation of the Army as a whole; it was dependent at the bases and at home on the discharge of the hospital population, and in the field on reduction in units and formations. A very large number of civil doctors and nurses who were employed in the Voluntary Aid Detachment hospitals which had been closed and who had been released were not included in the figures he had given.

Releasing Panel Practitioners.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board representing the National Health Insurance Commissioners whether he would state the number of medical men on the panel lists on the date of the signing of the armistice and the number of medical men who had been demobilised since that date, and what steps he was taking to secure a more efficient medical service for insured persons by obtaining an early demobilisation of medical men.—Major ASTOR replied: The number of practitioners working for the Insurance Committees in England on Oct. 1st, 1918, was 8084, besides a certain number holding commissions in the R.A.M.C. who were free to do some part-time work for their Committee. Since Nov. 11th the number of insurance practitioners on panels in England who have been notified to the Commissioners by the War Office up to Feb. 21st as definitely released from service was 647. In reply to the last paragraph of the question, I must remind the honourable Member that the responsibility for arranging with the Military, Naval, and Air Force authorities for the demobilisation of doctors needed for the civil population rests with the Ministry of National Service. My department makes periodical representation to that department for expediting the rate of release of doctors for civil needs, and for securing the release of particular doctors required for specially urgent necessities in individual areas. The Commissioners are in constant communication with the various Insurance Committees as to the needs of their areas in this respect. I am sending the honourable Member copies of circulars addressed to these Committees which will explain the procedure adopted since the armistice.

Insurance Practice.

Sir KINGSLEY WOOD asked the Secretary of the Local Government Board whether he was aware that there had been a serious diminution in the total number of panel doctors taking place continuously since the beginning of the war; whether he could state the number of such decrease as on the first day of January last; and what action he proposed to take in the matter.—Major ASTOR answered: Yes, sir; it must be remembered that besides the large numbers of insurance medical men serving with the forces, the normal diminution of medical men by age retirements from practice and by deaths during the five years have not (as in peace time) been made good by new entrants, because newly qualified doctors have been taken into the military forces throughout the period. It is believed that the number of medical men actually carrying on insurance practice in England on Oct. 1st last was some 3800 less than at the end of the year 1914. My department has in the last few days had further conference on the subject with the Ministry of National Service, and that department is in communication with the War Office who have stated that the Secretary of State is taking steps to expedite the release of doctors from the Army.

Bonus to Panel Practitioners.

Sir KINGSLEY WOOD asked the Secretary to the Local Government Board whether, with reference to the £250,000 bonus the Insurance Commissioners had agreed to pay to doctors on the panel lists, statutory authority had yet been obtained for such payment; and whether it was contemplated that such payment would be made for the present year only.—Major ASTOR replied: The statutory authority in the Appropriation Act, embracing the moneys provided by Parliament under Votes of Credit, covers the payments in question, the necessity for which arose from conditions due to the existence of a state of war. As regards the second part of the question, the payments now being made are in respect of the calendar year 1918 only; no undertaking has

been given that similar payments will be made in respect of the year 1919, but financial provision for that contingency will be proposed in the Parliamentary Estimates for 1919-20 shortly to be issued.

The Size of Panel Practices.

Sir KINGSLEY WOOD asked the Parliamentary Secretary to the Local Government Board whether he was aware that certain doctors on the insurance panel had over 6000 patients on their panel list and at the same time carry on a private practice; and whether he proposed to take any steps to secure a better provision for medical services to the insured population.—Major ASTOR answered: No, sir; I am not aware of any case in which an insurance practitioner has a list of over 6000 insured persons for whose treatment he is responsible single-handed. If my honourable friend has any such case in mind perhaps he will be good enough to furnish me with particulars. As regards the second part of the question, preliminary discussions with representatives of the medical profession preparatory to a general revision of the conditions of medical services for the insured have been taking place for some time, and careful consideration is being given by the department to the question of bringing about various improvements in those services.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CUMBERLIDGE, W. I., Capt., R.A.M.C. (T.), has been appointed Honorary Surgeon to the Leicester Royal Infirmary.
DOBRASHIAN, MARGARET, M.B., B.S. Lond., City Pathologist, Nottingham.
FOSTER, A. H., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Hitchin district.
NUTTALL, W. W., M.D. Durh., Certifying Surgeon under the Factory and Workshop Acts for the Folkestone district.

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Buckinghamshire Hospital.—H.S.
Birmingham University Faculty of Medicine.—Asst. Prof. of Anatomy. £500.
Bodmin, Cornwall County Asylum.—Jun. Asst. M.O. £300.
Bradford Children's Hospital.—H.S. £170.
Bradford Union.—Asst. M.O. £400.
Brighton, Royal Sussex County Hospital.—H.P. £100.
Bristol General Hospital.—Cas. H.S., Obstet. O., and H.S. £175.
Cardiff, King Edward VII.'s Hospital.—H.S. £200.
Carlisle, Cumberland Infirmary.—H.S. and H.P. £250.
Carlisle, Cumberland and Westmorland Asylum, Garlands.—Jun. Asst. M.O. £300.
Charlham, near Canterbury, Kent County Lunatic Asylum.—Med. Superintendent. £800.
Coventry and Warwickshire Hospital.—Res. H.P. £250.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £120.
East African Medical Appointments.—M.O. £400-£250.
Guy's Hospital, S.E.—Surg. Radlog. Also Med. Radlog. 50 gs.
Hackney Union Infirmary, Homerton, E.—Jun. Asst. M.O. £250.
Hampshire County Council.—Temp. Asst. M.O.H. £400.
Hospital for Sick Children, Great Ormond-street, W.C.—P.
Huntingdon County Hospital.—Res. M.O. £120.
Manchester, Baguley Sanatorium for Tuberculous.—First and Second Asst. M.O. £400 and £350.
Manchester, Booth Hall Infirmary for Children, Charlestown-road, Blackley, near Manchester.—Med. Supt. £500. Also Asst. Res. M.O. £250.
Manchester Children's Hospital, Pendlebury, Outpatients' Department, Gartside-street, Manchester.—Asst. M.O. £200.
Manchester Royal Infirmary Convalescent Hospital, Cheadle.—Res. M.O. £300.
Middlebrough County Borough.—Female M.O. for Maternity and Child Welfare. £350.
Middlesex County Council.—Tuberc. M.O. £800.
Norwich, Norfolk and Norwich Hospital.—H.S. £200. Also Asst. Hon. P.
Nottingham Children's Hospital.—Female Res. H.S. and Res. H.P. and Anesth. £250 and £200 respectively.
Nottingham City Asylum.—Second Asst. M.O. £300.
Queen Mary's Hospital for the East End, Stratford.—Hon. Gynecol. and Obstet.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £250.
Salford County Borough.—M.O. for Maternity and Child Welfare £400.
Sanmarian Free Hospital for Women, Marylebone-road.—H.S. £150.
Scarborough Hospital and Dispensary.—Two H.S.
Shanghai Municipal Council Health Department.—Asst. Health Officer. £900.
Sheffield City Hospital.—Asst. M.O.
Sheffield Royal Infirmary.—Cas. Officer. Also Oph. H.S. £150.
Staffordshire Education Committee.—Female Asst. M. Inspectors. £400.
Stannington, Northumberland, Children's Sanatorium.—Female Res. Doctor.
Stroud General Hospital.—H.S. £250.

Tottenham Maternity and Child-Welfare Committee, Ante-Natal Clinic.—Female M.O. £1 11s. 6d. per session.
 Tunbridge Wells General Hospital.—Two H.S.
 Union of South Africa Mental Hospital Service.—Six Asst. Phys. £230.
 Warwickshire and Coventry Joint Committee for Tuberculosis.—Asst. Tuberc. Officer. £200.
 Western Ophthalmic Hospital, Marylebone-road, N.W.—Two Asst. S.
 Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.
 Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
 The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Martock, Benthall, Perranporth, Brynamman, and Denby Dale, Yorks.

Births, Marriages, and Deaths.

BIRTHS.

FLETCHER.—On Feb. 25th, at Oldfield Farm, Maidenhead, the wife of Surgeon E. T. Fletcher, M.B., R.N., of a son.
 GREEN.—On Feb. 28th, at The Ferns, Romford, the wife of Charles D. Green, M.D., F.R.C.S., of a daughter.
 WOOD.—On March 1st, at Blenheim House, North Berwick, the wife of Captain Percival Wood, R.A.M.C., of a daughter.

MARRIAGES.

ARCHIBALD—CANT.—On March 1st, at Colchester, by Canon Brunwin-Hales, Robert George Archibald, D.S.O., R.A.M.C., to Olive Chapman, only child of Mr. and Mrs. Arthur Cant, of Claremont House, Colchester.
 WALLACE—KEENE.—On Feb. 26th, at St. Mary's Church, East Molesey, Surrey, Captain H. K. Wallace, M.D., R.A.M.C., to Alice Freda, youngest daughter of Rev. C. V. P. Keene and Mrs. Keene, of Crosswood, East Molesey.

DEATHS.

CHICK.—On Feb. 26th, at 21, Endsleigh-street, W.C., Dorothy Chick, M.D., B.S., Resident Medical Officer, Marlborough Maternity Section of the Royal Free Hospital, youngest daughter of Samuel and Emma Chick, of Chestergate, Baling, and Branscombe, Devon, aged 31.
 EVANS.—On Feb. 22nd, at The Firs, Lyndhurst, Hants, Colonel Arthur Owen Evans, late I.M.S.
 HEMINGWAY.—On Feb. 27th, at Princes-road, Wimbledon, from pneumonia, John Hemingway, M.R.C.S., L.R.C.P. Lond., aged 51.
 POLE.—On Feb. 27th, at Oxford, Charles Kingsley Pole, M.B., Ch.B., aged 30.
 PRYCE.—On Feb. 21st, at 35 General Hospital, Calais, of bronchopneumonia, Captain Arthur Meurig Pryce, R.A.M.C., aged 41.
 SEARPE.—On St. Chad's Day, at his residence, Marylands, Swanage, from influenza, Cyril Herbert Sharpe, L.R.C.P., L.R.C.S., aged 58 years.
 N.B.—A fee of 5s. 4s. charged for the insertion of Notices of Births, Marriages, and Deaths.

MANAGER'S NOTICE TO SUBSCRIBERS.

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ADVERTISEMENT RATES.

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 Official and General Announcements under 4s. 0d.
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Quarter Page, £2. Half a Page, £4. Entire Page, £8.
 Special Terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Professor J. A. Lindsay, M.D., has been elected chairman of the board of management of the Royal Victoria Hospital, Belfast, in succession to the late Sir William Crawford.

A MEETING of the Marylebone Division of the British Medical Association will be held on Wednesday, March 12th, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, W., to discuss the Ministry of Health and the attitude of the medical profession in relation thereto.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
 THURSDAY, March 13th.—Papers:—Dr. A. D. Waller: Concerning Emotive Phenomena. Part III. The Influence of Drugs upon the Electrical Conductivity of the Palm of the Hand.—Dr. W. L. Balls: The Existence of Daily Growth-Rings in the Cell Wall of Cotton Hairs (communicated by Dr. F. F. Blackman).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
 Wednesday, March 12th.

SOCIAL EVENING: at 8.30 P.M.
 Dr. Henry Head, F.R.S., will discourse on "Disease and Diagnosis." (Light refreshments and smoking).

MEETINGS OF SECTIONS.

Tuesday, March 11th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham):
 at 5 P.M.

Paper:
 Dr. O. Stanford Read: War Psychiatry.

Thursday, March 13th.

NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnsides): at 8.30 P.M.

Paper:
 Dr. A. E. Carver: Some Biological Effects due to High Explosives.

Friday, March 14th.

EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—William Butler, M. Greenwood): at 5.30 P.M.

Paper:
 Dr. H. M. Vernon: Industrial Accidents.

Members wishing to dine are requested to communicate with Captain Greenwood, 7, Northumberland-street, W.C. 2, not later than March 12th.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W.
 The Lettsomian Lectures by Col. W. H. Willcox, announced to begin on March 10th, have been postponed for a few weeks.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
 THURSDAY, March 13th.—5 P.M., Milroy Lectures:—Dr. J. C. McVail: Half a Century of Small-Pox and Vaccination.

POST-GRADUATE COLLEGE, West London Hospital, Hammer-smith-road, W.

Special Eight Weeks' Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
 Out-patients each day at 2.30 P.M.

LONDON HOSPITAL MEDICAL COLLEGE.

A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—

MONDAY, March 10th.—4.30 P.M., Lecture V.:—Dr. Hutchison: Conditions Simulating Dyspepsia.

FRIDAY.—4.30 P.M., Lecture VI.:—Dr. Hutchison: The Differential Diagnosis of Medical from Surgical Dyspepsia.

UNIVERSITY OF LONDON, KING'S COLLEGE, AND KING'S COLLEGE FOR WOMEN.

Course of Six Public Lectures arranged in conjunction with the Imperial Studies Committee of the University on Physiology and National Needs:—

WEDNESDAY, March 12th.—5.30 P.M., Lecture VI.:—Prof. A. Dendy: The Conservation of our Cereal Reserves.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.

A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).

WEDNESDAY, March 12th, AND FRIDAY.—5 P.M., Lectures III. and IV.: Dr. L. S. Dudgeon: Malarial Fever.

ROYAL INSTITUTE OF PUBLIC HEALTH, in the Lecture Hall of the Institute, 37, Russell-square, W.C.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions:—

WEDNESDAY, March 12th.—4 P.M., Prof. Sir Thomas Oliver: After-War Reconstruction—Social and Medical.

CHADWICK PUBLIC LECTURES, at the Technical College Hall, Bradford.

THURSDAY, March 13th.—7.30 P.M., Prof. Legge: Industrial Poisoning and its Prevention—II., Aeroplane Manufacturing; Dyes and Dyeing (illustrated by lantern slides).

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

MONDAY, March 10th.—3 P.M., Lecture:—Capt. G. F. Thomson: The Dynamics of Flying.

FRIDAY.—6.30 P.M., Prof. A. Keith: The Organ of Hearing from a New Point of View.

ROYAL SANITARY INSTITUTE, 99, Buckingham Palace-road, S.W.

THURSDAY, March 13th, FRIDAY AND SATURDAY.—10.30 A.M. each day, Conference on Post War Developments relating to Public Health.

Notes, Short Comments, and Answers to Correspondents.

THE VITAL NEED: A THIRD FACTOR.

Professor A. Harden, F.R.S., head of the Biochemical Department of the Lister Institute, delivered on Feb. 26th, at King's College, London, the fourth of a series of lectures on Physiology and National Needs, Scurvy: A Disease Due to the Absence of Vitamines being the subject of his discourse. In the previous lecture Professor F. G. Hopkins enumerated three mysterious substances, of unknown composition, necessary for the continued life of most animals, one of these being the antiscorbutic principle. This principle, Professor Harden said, would form the subject of his own lecture. The absence of this substance both inhibited growth and induced the disease scurvy, long known to be due to defective diet. The British were always a sea-going people, and as soon as voyages came to exceed a period of 1-2 months scurvy made its appearance among the sailors. The records of sixteenth and seventeenth century explorers were full of references to this disease, and fruits and vegetables came to be looked upon as remedial. At the present day adult scurvy was only known in times of war or of famine. Less rare than adult scurvy was infantile scurvy, first differentiated from rickets by Cheadle and Barlow. Recently owing to the shortage of vegetables outbreaks of the disease had occurred both here and in America, in this country particularly after the shortage of potatoes in the spring of 1917. Similar outbreaks had been recorded—e.g., during the potato famine in Ireland (1847) and in Norway (1904). During the American Civil War 30,000 cases of scurvy were reported.

Results of Experimental Investigations.

Little progress had been made in regard to the exact knowledge of the disease until it was experimentally treated in the laboratory. In 1907 the Danes, Holst and Frølich, used guinea-pigs for this purpose, and their work had been followed up in America and in this country at the Lister Institute. Guinea-pigs fed on a diet free from antiscorbutics, consisting, for instance, of oats, bran, and water, or, better still, autoclaved milk, developed scurvy in about three weeks, and died with all the characteristic symptoms of the disease. On adding antiscorbutic substances to the diet the animal, if not too far gone, would recover and grow in a normal manner. The following table was exhibited, showing the relative value of certain foodstuffs against beri-beri and scurvy:—

| | Against beri-beri. | Against scurvy. | | Against beri-beri. | Against scurvy. |
|-----------------------|-----------------------|--------------------|----------------------|-----------------------|--------------------|
| Cereals— | | | Fruit juices— | | |
| Whole wheat ... | ++ | 0 | Fresh orange or | | |
| Wheat germ ... | +++ | 0 | lemon ... | ++ | + |
| Wheat bran ... | ++ | 0 | Commercial lime... | ++ | 0 |
| White wheat flour | 0 | 0 | Eggs— | | |
| Pulses— | | | Fresh ... | ++ | ++ |
| Whole peas or lentils | ++ | 0 | Dried ... | ++ | ++ |
| Germinated do., do. | ++ | ++ | Meat— | | |
| Vegetables— | | | Fresh ... | ++ | + |
| Fresh cabbage ... | + | +++ | Tinned ... | 0 | 0 |
| Fresh potatoes... | + | + | Milk— | | |
| Carrots, &c. ... | + | + | Fresh ... | ++ | + |
| Dried (any) ... | + | 0 | Dried ... | ++ | 0 |
| | | | Yeast pressed ... | +++ | 0 |
| | | | Extract marmite ... | +++ | 0 |

It would be seen, therefore, that the green leaves of plants, the tubers of potatoes, and the juices of fruits were the chief source of antiscorbutics. The relative quantities of the antiscorbutic substance contained in various foodstuffs was indicated by some hitherto unpublished work of Dr. Harriette Chick and her colleagues, which showed that taking cabbage as 100, lemon juice came out at 66, orange juice at 33, swede juice at 40, cooked cabbage, germinated lentils, and runner beans at 20, lime juice 10-5, meat juice 5, grape juice less than 5, cooked potato 5, dried cabbage 1-2, and milk 1. The fact that germinating seeds contained the principle was important in providing a supply of the necessary substance where green vegetables were unobtainable.

Prevention and Treatment.

Investigation was hampered, Professor Harden went on, by the fact that the antiscorbutic principle was rendered inactive by heat, and therefore difficult to preserve, a fact which was important because most of our foods were cooked. It was better to cook vegetables at a high temperature for a short period than for a long time at a lower temperature. If stews were the staple diet orange juice should be added to the menu to make good the loss of vitamins. Vegetables dried in the air or otherwise lost a large part of their anti-

scorbutic principle. Alkalies¹ destroyed the principle and soda should not be added to the water used for boiling vegetables. In monkeys symptoms could be produced closely similar to those of infantile scurvy, and these yielded promptly to lemon juice deprived of its citric acid. Orange juice had a similar effect. Lime and lemon juice were judged aforesaid by the amount of acid which they contained. Lemon juice, after removal of free citric acid with chalk, retained its antiscorbutic properties. Beer, it had been suggested, owed its appetising and tonic properties to one or more of the vitamins accessory food factors, but modern beer was totally devoid of any antineuritic or antiscorbutic principle. The effect of scurvy on the bones and teeth of growing animals had been observed by Dr. Zilva and Major Wells, of the Canadian Medical Force. Guinea-pigs fed on an antiscorbutic-free diet might in some instances increase in weight normally, but on post-mortem examination the teeth showed complete destruction of the odontoblastic cells and of the structure of the pulp. Incipient scurvy had been studied by the American observer, Dr. Hess, who found that children fed on different preparations of milk might have scurvy in a subacute or latent form. In sterilising or pasteurising milk there was a danger that its already small antiscorbutic property would be lost altogether, and the same applied to dried milk. Dr. Harriette Chick and Miss M. Rhodes had produced definite evidence² that guinea-pigs brought up on dried milk suffered from scurvy. Swede juice could be substituted for orange juice. An advantage of the neutralised lemon juice was that it might be administered in large quantities without causing gastric disturbance.

Dr. Norman Moore, who presided, referred to the prevalence of scurvy in past times, not only on board ship but in ordinary life. A William Clowes, surgeon to St. Bartholomew's and Christ's Hospitals, had reported it to be common amongst the boys at the latter hospital. Dr. Budd, a physician to Christ's Hospital, induced the authorities to put potato upon the regular diet, when presumably scurvy came to an end. Clowes also in his writings mentioned the case of a ship that had started its voyage with a crew of 90 putting into Plymouth with an effective crew of only 28, the others being down with scurvy.

TWO XVII. CENTURY PHYSICIANS.

Mr. G. C. Peachey contributed last year to *Janus*, the organ of the Société Historique des Sciences Médicales, published at Leyden, articles on the two John Peacheys, the seventeenth century physicians. These articles have now been reprinted. The family of Peachey, Peachie, earlier Peche, according to the whim of the family branch or of the individual, belonged to the yeoman class of England, and during the sixteenth century were settled in villages of West Sussex, throughout the Fen district, and in East Anglia. From the Sussex branch was descended John Peachy, Licentiate of the College of Physicians, and through the other branches John Peachie, M.D. Caen, Extra-urbem Licentiate of the College of Physicians. They were not related except through some far distant ancestor. John Peachy, the son of a physician, was baptised at Chichester on Dec. 11th, 1654, and at the age of 17 matriculated at Oxford as a member of New Inn Hall, one of the "nests of Precians and Puritans," another being Magdalen Hall, of which Sydenham was a member. He graduated B.A. and M.A. respectively in 1675 and 1678, but there is no record of his having taken a degree in medicine. Probably he studied under his father, and afterwards at the hospitals in London. In 1684 he was admitted to the licentiate of the College of Physicians and practised in the neighbourhood of Cheapside. As the translator of the first English version of the works of Sydenham he is certainly entitled to fame, but it is curious to note that his Collections of Acute Diseases, now an extremely rare work, and his Collection of Chronical Diseases were themselves extracts from Sydenham's writings, and part of them were published in Sydenham's lifetime. It is suggested that Peachy's defence of the great physician and his opinions against the rancour of his opponents might have been reciprocated by Sydenham in giving his tacit consent to the publication of his works in English. Peachy must have been a man of phenomenal industry, for in the dozen years between 1686 and 1696 he published no less than 12 distinct medical works, all with one exception in English, though he was a competent Latin scholar. His fame, however, really rests on his association with Sydenham's works, and possibly his association with Sydenham himself. His independence of thought and action are shown by his courage in defying at the outset of his career the time-honoured tradition that works of medicine should appear in Latin, and by his aggressive attitude towards the College of Physicians in respect of fees and fines, which he refused to pay. He was openly contumacious to the College, and, regardless of professional ethics, he unwarrantably assumed the title of

¹ THE LANCET, 1918, II., 320.

² THE LANCET, 1918, II., 774.

M.D., charged low fees, and did not disdain to advertise. He died in 1718.

John Peachie, M.D. Caen (1632-1692) was born in Lincolnshire, and was descended through a line of clergymen. He was intended for the ministry, and in 1649 he was admitted a sizar at St. John's, Cambridge, but probably did not take a degree. His early years were spent under the stern discipline of Puritanism, and refusing to "conform" he was for 17 years the victim of the persecution of the times. During the plague year he was in prison, but was probably released in order that he might render service to the afflicted and add to the number of the heroic practitioners who remained at their post to fight the foe. Nothing more is heard of him, however, till 1672, when two months after the declaration of indulgence he went to Caen, where he may have taken his degree about 1676, and afterwards in 1679 he published an account of Cassumuniar, "the most proper corrector of the Jesuits Powder rend'ring that medicine safe and harmless." In 1683 he became a Licentiate of the College of Physicians, *extra urbem*. His self-appointed rôle was to minister to the needs of others, and to use his own words: "If what I have written may tend to the public advantage I have my end; and I could wish that all physicians would so far consult the good of mankind as to communicate what they have singular to the world, and so noble a science might be completed and health be the better preserved and restored."

SUMMER TIME.

SUMMER time will be brought into force this year on the morning of Sunday, March 30th, and will continue until the night of Sunday-Monday, Sept. 28th-29th. It began on March 24th last year and ended on Sept. 29th-30th. In France and Italy summer time began on Feb. 28th.

TOTAL DEATHS FROM WOUNDS IN THE GREAT WAR.

FROM figures compiled by the Chief of Staff of the United States Army it appears that the number of men of all nations killed in battle or who died of wounds during the warfare beginning August, 1914, was 7½ millions. The losses are divided very unequally between the two opposing sides, as Germany, Austria, Turkey, and Bulgaria are credited with 2½ million deaths and the eight principal opposing countries with 4½ millions, a proportion of 11:18. Measuring in hundreds of thousands, Russia heads the list with 17, Germany with 16, and France with 13. There follow: Austria, 8; British Empire, 7; Italy, 4½; Turkey, 2½; Belgium, Bulgaria, Rumania, and Serbia (with Montenegro), 1 each; the United States, ½.

CONFERENCE ON INFLUENZA AND ITS PREVENTION.

AT a conference on this subject held at the Institute of Hygiene on Feb. 28th Sir Malcolm Morris, the President, spoke of the remarkable differences of opinion which existed in regard to the prevailing epidemic. He propounded a series of questions which he asked the speakers to answer. Was there any relation between climate and influenza? The disease was rife in England, Australia, India, and America. Was it due to crowds? It attacked individuals in isolated places, and in November the employees of the tubes suffered less than drivers of omnibuses. What was the relation of the common cold to influenza? What was the value of masks? Was alcohol necessary? If so, at what stage of the disease should it be taken? He thought it was necessary neither for prevention nor treatment. What was the value of prophylactic vaccines, especially as regards streptococcal infection? What was the value of the Local Government Board regulations?

The answers given showed the considerable differences of opinion which existed among those present. Sir St. Clair Thomson said that all who were suffering from the disease should be isolated and required to wear masks or veils when anybody came near them. He was opposed to the use of irritating solutions for washing out the nose. Sir Kingsley Wood said that the steps taken by the Government were of a voluntary educational character. No power existed for ordering the discontinuance of meetings or the closing of schools. If the disease continued to spread he thought disciplinary action should be taken. Dr. Carnegie Dickson drew attention to the existence of carriers among persons with chronic infection of the air-passages. He considered that masks were useful. Prophylactic vaccines did not prevent but determined a milder attack of the disease. Dr. Hector Mackenzie laid stress on the need for improved hygiene of the mouth. Influenza being due to an ultra-microscopic virus, vaccines could hardly protect against the disease itself, but were advisable against complications. The wearing of masks was impractical, the minute germ readily passing through the finest meshes. Dr. R. Murray Leslie thought vaccines were helpful in warding off complications. Dr. D. C. Kirkhope did not think that the Local Government Board regulations with regard to cinemas

were effective. Nurses, he said, required more rest. Alcohol was useful as a stimulant. Dr. Stuart-Low objected to solutions for the nose, and advanced the theory that the poorness of food might have something to do with the epidemic.

BOOKS, ETC., RECEIVED.

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AN
Experimental Investigation
ON
RICKETS.

Two Lectures Delivered at the Royal College of Surgeons of England

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LECTURE I.

HAVING described in the first two lectures of this course the experimental results obtained in a Research on Alcohol for the Central Control Board (Liquor Traffic), I propose in the next lectures to deal with another social evil—rickets—and to give an account of an experimental investigation made for the Medical Research Committee with the object of finding the essential cause of this disease.

THE SERIOUS RESULTS OF RICKETS.

It is but little realised how great and how widespread is the part played by rickets in civilised communities. If the matter ended with bony deformities obvious to the eye it would be bad enough, but investigations have demonstrated that such deformities only represent a small part of the cases affected. Schmorl's histological investigations on children dying before the age of 4 years showed that 90 per cent. had had rickets. Again, Lawson Dick's examination of the children in London County Council schools, and more particularly the examination of their teeth, led him to state that 80 per cent. of such children had had rickets. The relation between rickets and defective teeth has been placed on an experimental basis recently by the work of my wife,¹ and there can be little doubt that any remedy which would exclude the one would almost certainly improve and might eradicate the other. The rachitic child, in fact, carries the stigma of the disease throughout life in the form of defective teeth.

Nor is this the most serious part of the evil, for the reduced resistance to other diseases of the rachitic child and animal is so marked that the causative factor of rickets may be the secret of immunity and non-immunity to many of the children's diseases which result in the high death-rate associated with urban conditions. It is a striking fact to remember that in the West of Ireland, where the death-rate is only 30 per 1000, rickets is an unknown disease, whereas in poor urban districts of this country where rickets is rife the death-rate in children varies from 100 to 300 per 1000. It is at least suggestive that there may be some relation between rickets and the enormous death-rate of towns, even although the disease in itself does not kill.

The experimental work I wish to describe in these lectures has shown that the rachitic condition need not be at all advanced before the animal's whole behaviour is transformed. It becomes lethargic and is far more liable to be affected by distemper and broncho-pneumonia and is very susceptible to mange. The low resistance of animals which develops as the result of conditions which ultimately lead, under favourable circumstances, to rickets is impressive.

So many of the conclusions regarding the ætiology of rickets have been based on a small number of experiments that it may not be out of place to record that this investigation, undertaken for the Medical Research Committee, has already involved the use of 200 puppies and is still incomplete.

On referring to the literature at the beginning of the research it was soon obvious that the number of hypotheses put forward to explain the ætiology of rickets was legion, while discussion on the subject with those having clinical knowledge only emphasised the completely speculative nature of the ideas held by those whose business it is to deal with the disease.

A considerable number of experiments were first made in an attempt to see whether the ætiology of rickets was to be sought along non-dietetic lines and it was only after failure that the dietetic solution was resorted to. This type of work has continued and has clearly shown that, however important other factors may be, and that there are other

factors is not denied, the dietetic problem is the primary key to the situation. In the next lecture some of the more commonly held hypotheses of rickets will be mentioned and discussed in relation to the results obtained in this work.

EXPERIMENTAL METHODS.

Although it is well recognised that different breeds of dogs vary considerably in their susceptibility to rickets, no special type has been used in this work. In some ways this may be disadvantageous; but, on the other hand, to be driven to associate rickets with a particular breed is in itself unsatisfactory and obviously leads the investigator into a blind alley if the ultimate object is to extend the results to children.

The experimental methods used to detect rickets have depended on (1) X ray examination of the bones; (2) calcium estimation of the bones after death; (3) histological preparations of the bones.

The calcium estimation of the bones has been made by Cahen and Hurlley's modification of the oxalate method. In comparative estimations it is useful; but, since it is well recognised that the calcium content of bones varies considerably and independently of the rachitic condition, this method can never be used alone and must always be controlled by histological examination. [In the lecture further details of the methods were described and X ray photographs and histological specimens were demonstrated by means of the epidiascope].

In these lectures I propose to illustrate the normality and degree of rickets obtained by means of the calcium oxide content of the bones. Histological preparations can be seen if desired and also the X ray photographs of many of the dogs. In all cases histological preparations of the bones were made and corresponded, in comparative experiments, with the CaO results given.

[A series of puppies with and without rickets was then shown]. In the puppies exhibited it will be observed that the differences between normal and rachitic puppies are similar to the differences between normal and rachitic children. Like the rachitic child, the puppy shows abnormally large swellings at the epiphyseal ends of the bones; it has a marked rickety rosary, its tendons and ligaments are loose, the bones tend to bend, and thereby help to exaggerate the leg deformity. The amount of deformity often depends on the weight of the animal. Again, the rachitic puppy is lethargic and does not jump about; its power to run, apart from the leg deformity and before this develops, is comparatively limited; there is, in fact, a general loss of tone of the musculature. Similarly, just as the rachitic baby is a good baby and does not cry much, so also the dog in this condition seldom barks or makes the superfluous efforts practised by the normal healthy puppy.

The puppies were started on their diets after leaving the mother, the ages varying between 5 and 8 weeks, the latter being the more usual. They were kept for varying periods according to the type of experiments. In the earlier periods they were usually killed after five to six months, but as the work progressed and the diets became more rachitic this time was considerably shortened.

DETERMINATION OF RACHITIC DIET.

Having determined to see what part diet played as a causative factor in rickets, it was necessary to get a standard diet which would always produce this condition in the experimental animals. The first diet used consisted of whole milk (175 c.cm. per diem) and porridge made up of equal parts oatmeal and rice, together with 1.2 g. NaCl. The oatmeal and rice was later replaced by bread and found to be as effective and easier to use. This second diet was afterwards modified as the experimental results were obtained. The following four diets (Table I.) have therefore been used

TABLE I.—*Rachitic Diets.*

| Diet I. | Diet II. | Diet III. | Diet IV. |
|--------------------------------|--------------------------|--|---|
| Whole milk, 175 c.cm. | Whole milk, 175 c.cm. | Separated milk, 175 c.cm. | Separated milk, 250-350 c.cm. |
| Oatmeal, rice, 1.2 g. NaCl. | Bread ad lib. | Bread (70 per cent. wheat) ad lib. Linseed oil, 10 c.cm. Yeast, 10 g. NaCl, 1.2 g. | Bread (70 per cent. wheat) ad lib. Linseed oil, 5-15 c.cm. Yeast, 5-10 g. Orange juice, 3 c.cm. NaCl, 1.2 g. |

¹ THE LANCET, 1918, II., 767.

during the course of the work, each one of which is a rachitic diet under laboratory conditions.

The modifications of the diets were carried out in order to: (1) ensure a more rapid development of rickets; (2) to be compatible with better health and better rate of growth. As will be seen later, the better the animal grows on a rachitic diet the more easily is rickets produced or rather the more difficult it is to stop. In the close examination of foodstuffs from this point of view, this is eminently desirable. It is undesirable in such work to have animals in a semi-starved condition involving a high mortality due to bronchopneumonia and marasmus. Puppies, like all young animals, tend to develop these diseases unless the diet is well chosen.

RESULTS OF ADDITION OF VARIOUS SUBSTANCES TO RACHITIC DIET.

Having obtained diets which normally produce rickets, various substances were added and the effect on the development of the disease noted. In the following tables the quantity of calcium estimated as CaO present in the shaft of the femurs of the animals fed on these diets is given. In the last column the histological findings of the bones examined are added.

TABLE II.—Diet I. plus more Whole Milk.

| No. of experiment | Diet. | Duration, Months. | Initial weight. | | | Final weight. | | | CaO in femur shaft. | | Histology results. |
|-------------------|-------------------|-------------------|-----------------|------|------|---------------|----|----|---------------------|--------|--------------------|
| | | | G. | G. | G. | G. | G. | G. | Dry. | Fresh. | |
| 43 | Diet I. | 4 | 905 | 2187 | 1282 | 235 | — | — | — | — | Rickets. |
| 52 | " | 8 | 1745 | 5200 | 3455 | 23.5 | — | — | — | — | " |
| 53 | " | 7½ | 1765 | 4245 | 2480 | 22.5 | — | — | — | — | " |
| 56 | + 325 c.cm. milk. | 5 | 1810 | 5280 | 3470 | 31.8 | — | — | — | — | Normal. |
| 57 | + 325 " | 5 | 1330 | 4980 | 3650 | 29.2 | — | — | — | — | " |

TABLE III.—Diet II. plus Meat and Meat Extracts.

| | | | | | | | | | | | |
|----|--------------------------|----|------|------|------|-------|-------|---|---|---|----------|
| 73 | Diet II. | 4 | 3950 | 6110 | 2160 | 20.7 | — | — | — | — | Rickets. |
| 96 | + dog biscuit. | 5½ | 1905 | 4200 | 2295 | 22.1 | 9.38 | — | — | — | " |
| 97 | " | 5½ | 1375 | 3295 | 1920 | 16.03 | 5.90 | — | — | — | " |
| 68 | + Wat. ext. of meat. | 4 | 4000 | 6540 | 2540 | 32.8 | — | — | — | — | Normal. |
| 69 | + Meat protein. | 5 | 4840 | 7630 | 2790 | 21.7 | — | — | — | — | Rickets. |
| 70 | + 80% alc. ext. of meat. | 5 | 4577 | 6695 | 2118 | 30.2 | — | — | — | — | Normal. |
| 93 | + 10 g. meat. | 5½ | 1220 | 7450 | 6230 | 29.53 | 15.43 | — | — | — | " |

TABLE IV.—Diet II. plus Yeast and Malt Extract.

| | | | | | | | | | | | |
|----|-------------------|----|------|------|------|-------|-------|---|---|---|-----------------|
| 96 | Diet II. | 5½ | 1905 | 4200 | 2295 | 16.03 | 5.90 | — | — | — | Rickets. |
| 94 | + 10-20 g. yeast. | 5½ | 1590 | 5000 | 3410 | 23.05 | 11.33 | — | — | — | " |
| 95 | " | 6 | 2410 | 6000 | 3590 | 18.02 | 9.75 | — | — | — | " |
| 75 | + Malt ext. | 4 | 3350 | 5240 | 1890 | 31.2 | — | — | — | — | Normal. |
| 86 | " | 7 | 1810 | 4500 | 2690 | 18.68 | 12.64 | — | — | — | Slight rickets. |

TABLE V.—Diet II. plus Different Fats.

| | | | | | | | | | | | |
|-----|---------------------------|----|------|------|------|-------|-------|---|---|---|----------|
| 73 | Diet II. | 4 | 3950 | 6110 | 2160 | 20.7 | — | — | — | — | Rickets. |
| 71 | + 10-20 g. butter. | 6 | 2150 | 6930 | 4780 | 29.04 | 15.5 | — | — | — | Normal. |
| 76 | + 10 c.cm. cod-liver oil. | 9 | 2715 | 3000 | 5235 | 27.41 | 16.82 | — | — | — | " |
| 80 | + 10 c.cm. linseed oil. | 5 | 2535 | 6115 | 3580 | 16.22 | 8.08 | — | — | — | Rickets. |
| 81 | " | 5 | 2875 | 5320 | 2445 | 13.33 | 6.08 | — | — | — | " |
| 109 | + 10 c.cm. peanut. | 5½ | — | — | — | 28.35 | 15.60 | — | — | — | Normal. |
| 102 | + Wat. ext. of butter. | 6 | — | — | — | 16.64 | 6.95 | — | — | — | Rickets. |

TABLE VI.—Diet III. with Various Fats instead of Linseed Oil.

| | | | | | | | | | | | |
|-----|---------------------|--------|------|------|------|-------|-------|---|---|---|-----------------|
| 138 | Diet III. | 3 | 1755 | 2685 | 930 | 16.58 | 7.14 | — | — | — | Rickets. |
| 140 | " | 3 | 1060 | 2100 | 940 | 20.46 | 7.36 | — | — | — | " |
| | | Weeks. | | | | | | | | | |
| 148 | With cod-liver oil. | 17 | 1735 | 3890 | 2155 | 27.78 | 16.51 | — | — | — | Normal. |
| 146 | With butter. | 17 | 1920 | 3765 | 1845 | 26.95 | 15.89 | — | — | — | " |
| 147 | With olive oil. | 17 | 1445 | 2625 | 1180 | 23.79 | 13.22 | — | — | — | Slight rickets. |
| 163 | With peanut. | 17 | 2350 | 4020 | 1670 | 18.88 | 13.81 | — | — | — | " |
| 146 | Diet III. | 17 | 1830 | 3605 | 1775 | 21.60 | 12.35 | — | — | — | Rickets. |

TABLE VII.—Diet III. Plus Meat and Meat Extracts.

| | | | | | | | | | | | |
|-----|------------------------------|----|------|------|------|-------|-------|---|---|---|----------|
| 141 | Diet III. + 5 g. meat. | 17 | 2490 | 5820 | 3330 | 17.48 | 7.19 | — | — | — | Rickets. |
| 143 | + 20 g. meat. | 17 | 2890 | 4400 | 1510 | 17.88 | 9.48 | — | — | — | " |
| 144 | + 50 g. meat. | 17 | 3690 | 8825 | 5135 | 15.74 | 10.72 | — | — | — | " |
| 160 | + Watery ext. of 50 g. meat. | 12 | 2005 | 3825 | 1820 | 13.88 | 7.20 | — | — | — | " |

Using Diet I., we see in Table II. that increasing the whole milk from 175 to 500 c.cm. per diem prevents the development of rickets. In other tables are experimental results obtained by means of Diet II.

On Diet II. not only does meat but both the watery and alcoholic (80 per cent.) extracts have an inhibitory effect. (Table III.) On the other hand, the protein residue after loss of extractives allows rickets to develop.

Table IV. shows the effect of adding malt extract and yeast to Diet II. Yeast therefore has no protective influence. Malt extract has some inhibitory action and delays the onset of rickets when added to Diet II.

A large number of experiments were now made in which the effect of different fats were analysed. A few of the results are given in Table V. Many other fats and margarines, animal and vegetable, were tested, but almost uniformly they prevented rickets, the only undoubted exception being linseed oil. The results allowed the evolution of Diet III., in which separated milk was used in order to eliminate the milk fat, whose place was taken by linseed oil. Yeast was also added to the diet. Using this diet, a closer analysis of the effect of different fats was possible. (Table VI.) Now we see from the calcium results, which are an accurate indication in this case of the rachitic picture, that the value of the oils is graded, cod-liver oil being the best and linseed oil the worst; the vegetable oils, olive and arachis, are not so good as butter.

It was found that adding orange juice (¼ orange per diem) did not prevent rickets. Further, that the addition of 5 g. calcium phosphate, or doubling the separated milk and so increasing the calcium intake in this form was without preventive action on the development of the disease. In Diet IV., therefore, the separated milk was doubled and 3 c.cm. orange juice per diem also given. On Diet IV. the growth and general health of the puppies seemed better, and both these factors are of importance in such an investigation. Another improvement was to substitute 5 g. of yeast by a small quantity of a commercial yeast extract (3-4 g. per diem).

On Diets III. and IV. it was found that small quantities of meat and meat extract did not prevent rickets developing, as they have previously been observed to do when used in addition to Diet II. Table VII. illustrates some of these results. Although meat did not prevent rickets, a closer analysis of these and other results showed that it did have some inhibitory effect. It will be noticed, for instance, that the CaO present in the fresh femur shaft of Exp. 144, where 50 g. of meat was eaten, is higher than in Exp. 141, where only 5 g. of meat was added to Diet III. The action of small quantities of meat (10 g. per diem) is best seen when given with quantities or types of fat otherwise ineffective in preventing rickets. It will often be seen to keep the growth normal, whereas in its absence rickets would develop. This, no doubt, explains the experimental results obtained when meat was added to Diet II. The small amount of butter—i.e., about 5 to 7 g.—in the milk of this diet had its anti-rachitic effect enhanced by the small amount of meat.

On Diet III. it was seen that the action of the fats as regards rickets was graded, the animal fats being more anti-rachitic than the vegetable fats and the latter differing from each other greatly. The best of the vegetable fats in preventing rickets are arachis (peanut) and olive oils. The worst of those examined include linseed, cottonseed, babassu oils, a hydrogenated fat, and cocoanut oil. These oils were all refined.

IMPORTANCE OF DIETETIC FACTOR.

The above dietetic results indicate that diet plays an important part in the etiology of rickets. An examination of the results obtained suggests that rickets is a deficiency disease which develops in consequence of the absence of some accessory food factor or factors.

Of the three factors known, fat-soluble A, water-soluble B, and antiscorbutic, two of these can be at once excluded. Yeast has no preventive influence on the development of the disease, and in consequence water-soluble B cannot be considered as of importance. Again, orange juice, sufficient to exclude any possibility of scurvy when considered with the rest of the diet, did not inhibit the disease, and this therefore allows the exclusion of the antiscorbutic factor. On the other hand, the anti-rachitic substances for the most part have been found, so far as the rickets experiments have gone, to be similar to those in which, according to the

experiments on growth, of McCollum, Osborne, Mendel, and others, fat-soluble A is present. It therefore seems probable that the cause of rickets is a diminished intake of an anti-rachitic factor which is either fat-soluble A, or has a somewhat similar distribution to fat-soluble A. The facts are not all in favour of this hypothesis as it stands, and these will be discussed in the next lecture.

Another point which has been definitely established in the course of this work is that rickets develops much more readily in the fast-growing puppies than in those growing slowly. As might be expected, therefore, the prevention of rickets in a rapidly growing dog requires more anti-rachitic factor to keep the growth straight. This point is brought out in the case of two puppies of the same litter (Exps. 173 and 174) fed on the same diets (Diet IV. + 10 g. meat). The larger puppy grew much more rapidly than the other. Puppy (K) 173 increased from 1130 to 2240 g.—i.e., a gain of 1110 g. in 10 weeks, whilst L (Exp. 174) increased in weight from 1800 to 3970 g.—i.e., a gain of 2170 g. in the same period. It will be seen in the X ray photographs that rickets is more strongly developed in the faster growing dog, although both are rachitic, the diets being deficient in the anti-rachitic factor. Puppies of the same litter which received 10 g. of butter in addition to the diets received by Nos. 173 and 174 were normal.

LECTURE II.

We saw in the last lecture the manner in which the experiments were carried out, together with some of the main results. Substances which had no preventive action on the development of rickets included separated milk, bread, the protein of meat, yeast, linseed and babassu oils, and hydrogenated fat. Substances with well-marked preventive action included cod-liver oil, butter, and suet. Then there were other substances whose preventive action was definite but not so great as that possessed by the above animal fats. In this group were meat, meat extract, malt extract, lard, arachis and olive oils.

THE PART PLAYED BY FAT-SOLUBLE A.

The results seemed to favour the hypothesis that experimental rickets can be prevented by diets containing an abundance of anti-rachitic factor and that the anti-rachitic factor and fat-soluble A have somewhat similar distributions. There are, however, several points which are not in harmony with the ordinarily accepted views about fat-soluble A. Three of these will be discussed.

Relation of Rapidity of Growth to Development of Rickets.

Rickets develops best in rapidly growing animals, this fact being in harmony with the clinical observation that large and rapidly growing children most often suffer from rickets, whereas marasmic children generally escape. It is, therefore, difficult at first sight to associate a disease of rapid growth with a deficiency of fat-soluble A which is, according to accepted teaching, necessary for growth. For it has been shown, in the case of rats by McCollum, that both fat-soluble A and water-soluble B are essential for growth. Before fat-soluble A and the anti-rachitic factor can be held to be the same thing, further consideration is necessary.

The first point to emphasise is that some of the fastest growing dogs in these experiments have had very little fat-soluble A in their diet. Here are two examples:—

| | Exp. 144. | Exp. 175. |
|--|-----------|--------------|
| Diet III. + 50 g. of meat per diem ... | — | — |
| Initial weight ... | 3690 g. | — |
| Increase in weight in 13 weeks ... | 5135 g. | 4586 g. |
| Rickets ... | Marked | Very slight. |

If the milk were completely separated, Diet III. ought to have contained no fat-soluble A. Meat is reputed to contain little or no fat-soluble A when devoid of fat. The fat was dissected off as completely as possible, but there was undoubtedly a little not removed.

The following experiments show that when only 10 or 5 g. of meat were added, or even without any meat, good growth was obtained.

In experiments 186 and 185 no meat was present in the diet and yet the puppies grew considerably, though, it is true, not to quite the extent of Exp. 190 where the fat eaten was cod-liver oil, which is known to contain fat-soluble A.

| | Exp. 176. | Exp. 141. | Exp. 186. | Exp. 185. | Exp. 190. |
|------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------------|---------------------------------------|
| Diet ... | D. III. + 10 g. meat. | D. III. + 5 g. meat. | D. IV. (Linseed oil). | D. IV. (Olive for linseed). | D. IV. (Cod-liver for linseed). |
| Increase in weight ... | 2330 g. in 10 weeks. | 2720 g. in 10 weeks. | 1200 g. in 5 weeks. | 1100 g. in 5 weeks. | 1525 g. in 5 weeks. |
| Condition ... | Rickets. | Rickets. | Rickets. | ? | Normal. |

These results cannot fail to raise the question as to the necessity of fat-soluble A being present in the diet before growth is possible. As the experiments were not carried out from the point of view under discussion I do not naturally deny that fat-soluble A is necessary for growth, more especially as the separation of the milk in the diets was not always perfect. I think, however, that it can be definitely stated that the amount of growth a puppy experiences has no relation to the amount of fat-soluble A in the diet, although a small minimum amount may be necessary. It is, of course, possible that puppies can make use of considerable stores of fat-soluble A in their own tissues, which will allow growth for some months even in the circumstances of deficient fat-soluble A in the diet.

It has, however, been already pointed out in this work that large and rapidly growing puppies require more anti-rachitic factor to prevent the development of rickets. If, therefore, fat-soluble A and the anti-rachitic factor are identical the presumption is that the function of fat-soluble A in the diet of puppies is not so much to ensure growth as to promote correct growth; in other words, to keep the growth straight: and the greater the amount of growth in any period the greater is the amount of fat-soluble A necessary to keep it along normal lines. If this view is correct, then it can hardly be claimed that fat-soluble A is in any different category from the point of view of growth than the antiscorbutic factor, for, even in the absence of this latter, the rate of growth diminishes and there is often rapid loss of weight.

The Action of Meat and Meat Extracts.

The second difficulty involved in considering the anti-rachitic factor and fat-soluble A as identical is the part which meat and meat extracts play in the development of rickets. It has been seen that, although when added to Diet II. these substances prevent rickets, in the case of Diet III. rickets develop. Yet even in the Diet III. and IV. experiments, the action of meat is undoubtedly inhibitory in nature and, when 50 g. of meat are given, will almost prevent rickets in a small puppy. Just as in the last section it was seen that meat has a stimulating action on the growth of puppies far beyond its fat-soluble A content, so also it appears now that the anti-rachitic action of meat is in a greater measure than any fat-soluble A it is reputed to contain. Either we must recognise that meat contains more fat-soluble A than the rat-feeding experiments have led us to believe or we must endeavour to find another explanation of the action of meat in rickets. It seems to me that another explanation is possible.

It is known that meat has one action on metabolism, which is more strongly developed than in any other food-stuff. This is its specific dynamic action or power to stimulate the total chemical exchanges taking place in the body. In having this stimulating action it will increase the effectiveness of any fat-soluble A in the diet and will tend to prevent the storing up and deposition of this substance in the subcutaneous and other tissues. Again, any fat-soluble A in the tissues will be more readily mobilised under the stimulating influence of the metabolising meat. It is probable that the anti-rachitic action of meat may therefore be due more to its making the fires burn more brightly, and thereby increasing the effectiveness of any fat-soluble A present in the body, rather than to the fat-soluble A it possesses in itself. If this explanation of the action of meat be true, then it is still possible to regard fat-soluble A and the anti-rachitic factor as identical.

The Different Effects of Vegetable Oils.

The third difficulty, which is probably of less importance than the two foregoing, is the widely different action of the vegetable fats as regards the development of rickets. In the growth experiments of previous workers all the vegetable fats are described as deficient in fat-soluble A, and the impression is received that there is but little difference

between them. On the other hand, their anti-rachitic influence varies considerably, being obviously present in arachis and olive oils and absent in linseed and babassu oils. Other vegetable oils like coconut and cottonseed occupy an intermediate position. If the anti-rachitic factor is fat-soluble A, then it must be accepted that the type of experiment described in this work is a more delicate test for fat-soluble A than previous work involving the growth of rats.

The difficulties have now been stated and briefly discussed. On the whole, it will probably be agreed that they are not formidable, and not more than might be expected under the circumstances.

Since this is probably the first research on growth factors carried out on dogs, it might be expected that the facts would not be identical with those met with in rats. Again, a superficial survey of the question suggests that particular difficulties would be met with. For we know something of the part played by accessory food factors in such deficiency diseases as beri-beri and scurvy, and we know something of the part played by these substances in growth, but in the case of rickets we are apparently up against a combination of both a deficiency disease and growth, rickets, in fact, being a disease accompanying growth. Whether the anti-rachitic factor is fat-soluble A as previously understood is therefore undecided, but, on the whole, these substances appear to be identical. It is at least certain that the distribution of the two substances is remarkably similar.

REVIEW OF SOME EARLIER HYPOTHESES AS TO ÆTIOLOGY.

It is interesting to see how the facts brought out in this work fit in with some of the most commonly held hypotheses of the ætiology of rickets. I think it will be agreed that the accessory factor hypothesis allows many of these older hypotheses to be so focussed that a common and simple image is visible.

Dietetic Hypothesis.

Rickets as a disease due to deficiency of fat.—The work of Bland-Button on the lion cubs at the Zoological Gardens has left its impress on English thought as regards rickets and, together with the acknowledged efficacious results that follow the treatment of rachitic children with cod-liver oil and other fats, has brought about a general acceptance of the view that rickets is due to deficient fat in the diet. The results recorded here make it clear why this view is so commonly held, but demonstrate that the efficacy of the treatment—curative or preventive (as regards the latter the work of Hess and Unger is of particular interest)—does not depend on fat *per se*, but rather on the type of fat, and whether it contains an abundance of the anti-rachitic factor, animal fats being superior to vegetable fats.

Excess of carbohydrate in the diet.—When a diet contains excess of carbohydrate it means that it is made up largely of cereals. Now cereals, and more particularly cereals like wheat, rice, and oats, which have undergone transformation in the course of manufacturing processes, are most deficient in anti-rachitic factor. A diet, therefore, of such substances is quite unbalanced and most effective in producing rickets.

Deficiency of fat and excess of carbohydrate.—This condition comprises the first two hypotheses, and what is said about them can be extended with further emphasis to this suggestion. Such a combination would most certainly involve a deficiency of anti-rachitic factor.

Deficiency of calcium salts in the diet.—It has been seen previously that abundance of calcium in the diet, either in the form found in separated milk or in calcium phosphate, will not prevent rickets when the diet is deficient in anti-rachitic factor. Similarly, it has been found by some workers that a diet deficient only in calcium salts, but otherwise adequate, will not produce rickets. It is, however, more than probable that a deficient calcium intake associated with deficient anti-rachitic factor will bring about a more acute production of rickets, and must always be an adjuvant factor to be considered in the ætiology of rickets.

The "Domestication" Theory of Rickets.

Von Hansemann's "theory of domestication" includes in a comprehensive way all the unhygienic conditions associated with life in civilised and more particularly in crowded communities. The difficulty is that we have not yet complete knowledge as to what is unhygienic in the environment of civilisation. There is something subtle about the problem, and many of the factors about which we hear so much may be of little or no importance when compared with factors

about which nothing is at present known. Modern mode of life, and particularly of urban life, has involved two main changes in environment: (1) diet; (2) greater confinement and lack of fresh air. My experimental results have indicated that the dietetic changes are of prime importance in bringing about the widespread development of rickets, although, according to the researches here described, diet must be considered from an entirely new point of view.

Effects of Confinement.

At this point I wish to consider the part played by confinement in the ætiology of rickets, more particularly because in recent years the experimental work of Findlay has indicated that it may be of importance. Findlay's work involved the use of 12 dogs fed on a diet of oatmeal porridge and milk (amount not stated). It will be seen that this diet is similar to Diet I. used in my experiments, a diet which normally produced rickets in experimental puppies. (Diet I. was composed of whole milk 175 c.cm., oatmeal and rice, and 1-2 g. NaCl.) On this diet, then, the confined dogs were rachitic, the dogs obtaining exercise normal.

It seems to me that, working with such a diet, which approaches a rachitic diet, experimental results can only show that want of exercise is a factor in the production of rickets, but cannot be regarded as proof that it is the primary factor. Before the acceptance of this hypothesis is possible it must be shown that confinement on an adequate diet—that is to say, one compatible with the best health, always brings about rickets. Certainly the porridge and milk diet, unless the milk is large, cannot be considered healthy (in three months two of Findlay's confined puppies died of broncho-pneumonia and one of marasmus).

The beneficial effect of freedom in the case of dogs on an inadequate diet is what might be expected and is not, in my opinion, discordant with a dietetic hypothesis. The constant movement must raise the whole metabolic changes in the body and, in the first place, prevent or delay the deposition of fat with its accessory food factor in the subcutaneous and other depôts and, secondly, bring into activity any anti-rachitic factor normally stored away and ineffective. Exercise, in other words, must give a greater opportunity to any anti-rachitic factor in the food or tissues of the animal to play its part in the animal economy. In addition to this, exercise or the possibility of exercise undoubtedly improves the animal's health, and it is almost certain that a rachitic diet is more effective in producing rickets when the animal's health is subnormal as it may be following continuous confinement.

A strongly rachitic diet after a few weeks has a decided effect on the animal's activity, and it is difficult to give any real exercise to a puppy that is rachitic even though the bony and ligamentous changes may not be the disability which limits the movement. On the other hand, confinement generally fails to prevent a well-fed puppy from taking abundant exercise. The analogy can probably be applied with greater force to children; a well-fed child between 9 months and 2 years can get exercise whatever its environment, whilst a child with active rickets will show the same lethargy in a slum or the middle of Hyde Park. The activity of an infant is not to be measured by the amount of running it performs, but by its small movements.

My own experience is that confinement will not produce any symptoms of rickets in adequately fed puppies.

Results of Investigation in Glasgow.

It may not be out of place to refer to the recent statistical account of an investigation made by Miss Ferguson on rickets, more particularly in Glasgow. The results of this work are against the hypothesis that rickets is a dietetic deficiency disease and the general conclusion, although undetermined in a definite sense, is that the factors favouring the development of rickets are: (1) Insufficient space in houses; (2) confinement in such houses; (3) imperfect parental care. No support is given to the dietetic hypothesis. It is interesting, however, to examine some of the results relating to family budgets in this paper.

Below are given the tables relating to the "average consumption of food" (p. 68) in rachitic and non-rachitic families.

Now let us consider the tables, obtained by Miss Ferguson, in the light of the accessory factor hypothesis. First, what are the substances in the diets which allow rickets—i.e., are

Average Consumption per "Man" per Day of the Chief Articles of Diet in Grammes.

(1) Rachitic families. (2) Non-rachitic families.

| | (1) | (2) | | (1) | (2) |
|--------------|-------|-------|---------------------|------|------|
| Flour... | 387.9 | 378.2 | Other cereals ... | 15.6 | 26.9 |
| Potatoes ... | 291.0 | 236.8 | Margarine or butter | 32.6 | 38.5 |
| Milk ... | 256.0 | 309.0 | Fish ... | 15.7 | 35.9 |
| Meat ... | 89.1 | 92.6 | Eggs ... | 15.1 | 30.4 |
| Sugar... | 91.4 | 84.0 | Cheese... | 6.7 | 8.2 |
| Oatmeal ... | 40.4 | 36.0 | | | |

deficient in anti-rachitic factor? The answer is flour, potatoes, sugar, oatmeal, and other cereals. On the other hand, what are the anti-rachitic substances? Milk, meat, margarine or butter, fish, eggs, and cheese. The following table shows how the diets of rachitic and non-rachitic families differ as regards these articles. The rachitic families received:—

| Substances allowing rickets. | Substances delaying or preventing rickets. |
|------------------------------|--|
| 11.7 g. more flour. | 53.0 g. less milk. |
| 54.2 g. " potatoes. | 3.5 g. " meat. |
| 7.4 g. " sugar. | 5.9 g. " margarine or butter. |
| 4.4 g. " oatmeal. | 20.2 g. " fish. |
| 11.3 g. less other cereals. | 15.3 g. " eggs. |
| | 1.5 g. " cheese. |

Is it a coincidence that except as regards "other cereals" there is an increase in the diet of the rachitic families of the substances allowing rickets and, what is of greater importance, a decreased amount of substances having an anti-rachitic influence? It will, of course, be answered that the differences are too small in amount to be regarded as of importance. As a matter of fact, a moment's consideration will show that the real state of affairs is probably more emphatic than the figures represent. The outstanding fact brought out in Miss Ferguson's paper is that rickets is often associated with the more careless parents. It is clear that the infants below 2 years old will not get from such parents their proper share of the "good things" of the articles of the above budgets. The good things happen to be those substances containing the anti-rachitic factor. The children will undoubtedly be put off with an undue proportion of bread and the commoner foodstuffs which produce rickets.

It is improbable, however, that family budgets will ever decide the course of rickets in individual cases, but sufficient has been said to make it clear that in the appraisal and criticism of this statistical work too little attention has been given to this side of the problem and too much to the exercise and confinement factors.

GENERAL CONSIDERATION OF RICKETS AS A DEFICIENCY DISEASE.

It will be noticed that, although rickets has been interpreted on the basis of my experimental results as primarily a deficiency disease of a dietetic nature, this has not prevented other conditions from receiving attention and being considered as of some importance. A knowledge of general metabolism would not allow the exclusion of other factors; for dietetic problems must always be regarded as a whole, and the idea that accessory food factors can be considered separate and apart from other elements of the diet and from the general metabolism is unsound.

An adequate diet is itself a unit, and its soundness, to a large extent, consists of the mutual assistance and interplay in the metabolic changes the elements experience in the body. The absence of, or deficiency in, one element means the ineffectiveness of another. For instance, the absence of carbohydrate involves a defective oxidation of fat, and probably an inefficient protein metabolism. Similarly, it is possible to imagine an abundance of accessory food factors in the diet which may, however, be ineffective because of some wrong balance in the energy-bearing materials. The same argument applies where the metabolism varies for reasons other than diet.

These few words are all the more necessary because recent work on accessory food factors has appeared too self-contained and, if persisted in, may be responsible for a period of disbelief in their existence with subsequent lack of progress in the study of a subject which is obviously of prime importance both from the academic and practical points of view.

The Dietetic Problem.

There is some danger in applying laboratory results to a clinical condition, more especially when the results are new and for the most part uncontrolled by clinical observation. But some remarks are necessary in this connexion, for, if experimental research can point to the real cause of a disease, then not only is the curative treatment controlled, but, what is of much greater importance in the case of rickets, it ought to be possible to indicate why rickets is widespread and to direct knowledge along preventive lines.

It appears, then, from this work that the foodstuffs of an infant ought to contain a maximum amount of anti-rachitic factor. Since, further, the dietetic problem is one of balance, foodstuffs which contain no anti-rachitic factor cannot be considered as neutral, but as positively rickets-producing, for the more of them that is eaten the greater is the necessity for foods containing the factor. Since there is a limit to what a child can eat, the inference is obvious. It is probable that bread is the worst offender, and to allow bread to form too large a part of an infant's dietary seems to me to be courting disaster. The same statement may apply to other cereals, but this has not been worked out to any extent.

Another point of importance is the type and amount of fat eaten by children. Since the above remark as to the limited amount of food a child can eat applies with even greater force to fat, it is necessary to give children the best fat from the point of view under consideration. They should therefore not be given vegetable margarines or any other vegetable fat. The natural fat for a child is the fat of milk, and to give it a vegetable fat not only limits the amount of butter it can eat, even if procurable, but also weighs down the diet in the rachitic direction. If additional fat is given to that normally eaten, then cod-liver oil is the best.

Milk as an Anti-rachitic Factor.

Undoubtedly milk ought to remain the staple article of diet not only until weaning, but for some years after this time. Milk is undoubtedly better than the corresponding amount of butter. Under normal circumstances the child would then be assured of a good supply of anti-rachitic factor. Not, however, under all circumstances is this certain, for the work of McCollum, Simmonds, and Pitz has shown that before an abundance of fat-soluble A appears in the milk the mother must have a good supply of this substance in her food. This means that the animal's power of synthesising these accessory food factors is small or absent. Grass is a good source of fat-soluble A for the cow, and a well-fed cow, from this point of view, will give good milk. The mother drinks this milk, and the accessory food factors are passed on to her mammary glands, thereby allowing the breast-fed child to get an adequate supply.

The problem therefore reverts largely to the feeding of the cow, and it is probable that the cow fed in the stall largely on vegetable oil-cakes will give a milk deficient in accessory food factors. If, therefore, a nursing mother's diet is deficient in the anti-rachitic factor, it is easy to understand how the breast-fed child develops rickets, for it is probable that the same argument applies even if it should subsequently prove that the anti-rachitic factor and fat-soluble A are not identical. Recently Hess and Unger have shown that the diet of the negro women in New York, whose breast-fed children are nearly always rachitic, is very often deficient in fat, the amount of milk they drink being small. These suggestions may also explain why rickets develops more commonly in the winter months, when the cow's diet is more artificial.

Other Foodstuffs.

As for the action of other foodstuffs, it has been pointed out that meat has an anti-rachitic effect to some extent and even in small quantities (10 g. a day to a puppy) will render a slightly rachitic diet safe, probably by making the anti-rachitic factor in the diet more effective. Vegetable juices seemed also to have some inhibitory action on the development of rickets.

In these days, when proprietary articles are so commonly used as foods for children, it is of vital importance that these substances should be judged by their accessory food-factor content in addition to the ordinary analysis as to any protein, fat, carbohydrate, and salts they may contain.

Synthetic milks, especially such as contain linseed and other vegetable oils, ought to be discountenanced as foodstuffs unless it can be satisfactorily shown that their accessory food factors are abundant. Similarly, the dispensing of vegetable oils instead of cod-liver oil to children, often rachitic when the oil is given, may do much more harm than good. This is most certainly the case, as I pointed out at the Physiological Society's meeting in January, 1918, when the type of Marylebone cream containing linseed oil is given. If children are to have the best chance for a healthy existence, until further work extends or modifies my experimental results, it would be safer to exclude all vegetable oils from their dietary.

Finally, it is necessary to point out that this experimental work is far from complete, and no doubt in the near future much further knowledge will be forthcoming. The subject is of great importance and will not end with rickets. For instance, the researches of my wife on the action of accessory food factors on the development of teeth show how necessary it is that throughout the whole period of calcification of the teeth—i.e., up to the eighteenth year—there should be abundance of anti-rachitic factor in the diet, and a deficiency at any period will be reflected in the calcification and probable uneven arrangement of the teeth. Still further points of practical interest will come to light soon.

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CHEMOTHERAPY IN CUTANEOUS TUBERCULOSIS,

WITH REPORT ON TWO CASES TREATED WITH ELLIS'S PICRIC-BRASS PASTE.

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By the generosity of Dr. H. A. Ellis I have been permitted to collaborate with him and make use of the brass preparations he has introduced and employed with marked success in the treatment of cutaneous and other forms of tuberculosis. He has further placed me in his debt by very kindly sending an advance copy of his contribution to this number of THE LANCET. In it I note he apologises for what he describes as empirical deduction. I venture to think that he is to be congratulated on a research which may be of far-reaching importance, and which will remain an example of persevering investigation calling for the highest attributes of the scientific searcher for the truth.

Work of Continental Investigators.

Dr. Ellis was not aware that his researches have been to some extent forestalled by lengthy investigation on the continent, particularly in Germany, following, I believe, French inspiration, and stimulated later by the brilliant results attained by Ehrlich and his school. In France in 1894 two preparations of copper had been successfully used by Luton, father and son, cuprum phosphoricum insoluble in water, and cuprum aceticum soluble in water.¹

Of the German investigators, Finkler and von Linden working at Bonn in collaboration used with some success on tuberculous guinea-pigs preparations belonging to two dissimilar groups; on the one hand, the chlorine—and iodine—hydrogen salts of methylene blue, and on the other, certain copper salts, especially copper chloride. To Professor Meissen was entrusted the task of testing these preparations on lung tuberculosis, to Strauss that of testing them on lupus and other external tuberculous affections.²

Von Linden demonstrated that while the living tubercle bacillus takes up other colouring matters slowly, it quickly stains with the two salts of methylene blue, to which stains

it is tenacious, and though not slain loses its faculty of development.

Strauss showed that various copper compounds, notably copper-lecithin compounds,³ are capable in a 1 per cent. solution of inhibiting the tubercle bacillus after five hours and killing it after 24 hours. Rubbed up with a lecithin soluble copper salt the tubercle bacilli became green but retain their specific colouring power. After one hour they show morphological changes. Later they lose their colouring faculty and show brown granules in their interior and after several hours further disintegrate.

Further investigation showed that by injection into guinea-pigs infected with tuberculosis, both the methylene blue and the copper salts could be demonstrated in the tubercle bacilli.

These researches are of fundamental importance and represent a great advance in the chemotherapy of tuberculosis.

Lecutyl and Other Copper Compounds.

Without detailing the laborious experiments of the German investigators, it may be stated that their experiments led to the introduction of a compound composed of copper, lecithin, and cinnamic acid, to which was given the name lecutyl.⁴ Following encouraging animal experiments with controls, this and other copper compounds have been used, in some cases with notable success. The preparations have been administered by mouth, subcutaneously, intravenously, intramuscularly, and as local applications.

As to the toxicity of copper, Strauss reports as follows:—

"The harmlessness of copper may be demonstrated on the basis of experiments carried out both in animals and the human subject as recorded in literature when the doses as applied in the case of man remain below the level of toxic action. Professor Meissen has recently gone into this question thoroughly, and it should be sufficient to direct attention to this exhaustive work. In spite of that, we should not omit to mention that experience hitherto acquired in the case of more than 150 persons affected with external tuberculosis has strengthened our belief in the innocuousness of copper. An objectively demonstrable nephritis which was soonest to have been expected has never made its appearance. It must be emphasised how well the human organism tolerates small doses even when they are introduced for an uninterrupted long period. Injurious secondary effects might arise through coagulation of albumin similar to those that are to be expected from the action of mercury. These might set up resistance reactions in the excretory organs; just as with mercury, stomatitis, nephritis, and enteritis are experienced, so with copper which is most likely stored up in the liver, hepatitis and after that nephritis might be expected. These phenomena have not been observed to follow doses which have been given in the case of man. Reactions affecting the gastro-intestinal tract have now and then been observed, such as eructations and in rare cases vomiting. The stomach protects itself against the precipitation of albumin and then requires an intermission of the treatment. What one has to fear, especially in the case of intravenous administration, are attacks of acute rather than of chronic intoxication."

Strauss's last work, to which I have had access, appeared in 1915.⁵ In it he describes the specific action of lecucyl on tuberculous tissue as follows:—

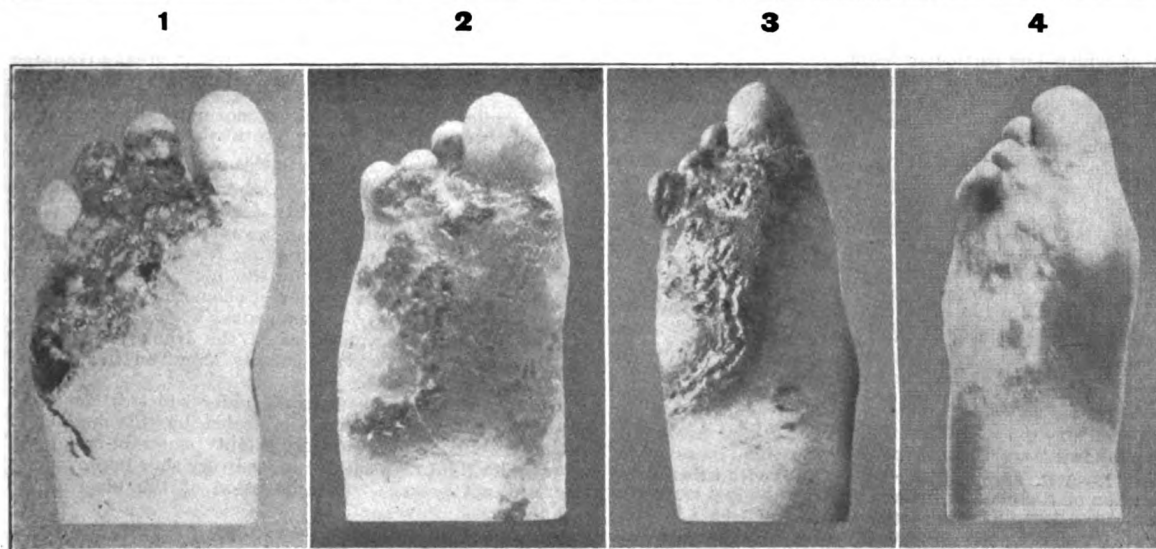
"In lupus only the nodules and infiltrations are destroyed. In the very first days of treatment they are laid bare, like a sieve, and later go on to atrophy when all tuberculous tissue has been destroyed."

This article is accompanied by a series of striking illustrations of the end-results of treatment as applied to the face.

The great objection to the lecucyl treatment is that it is very painful. Administration of lecucyl by a painless method has so far been impossible of attainment.

In addition to the lecucyl treatment Strauss advocated the intravenous injection of diamide glycoacal copper, employing a solution which he calls "H." With faultless technique it is claimed that this method will become completely painless. Solution H contains 0.01 pure Cu per c.mm. From 0.5 to 5 c.cm. may be injected twice a week, slowly increasing from 0.5 c.cm.; half doses in the case of children. He states that in general 1 mg. Cu per kilo body-weight is to be reckoned an innocuous dose. In combined general treatment only small doses should be given intravenously in order to avoid cumulative effects.

This work apparently attracted little attention in England, but shortly before the war I went to Germany particularly to ascertain what success had been obtained and to what extent these preparations could be safely and wisely applied. I saw the preparations in use in certain German clinics, notably at the sanatorium at Hohenlychen, near Berlin, but the onset of hostilities and the impossibility of obtaining the German preparations, together with pressure of work resulting from the war, led me to abandon temporarily any attempt to procure or employ them.



1. A. B., on admission. 2. After sun treatment alone. 3. After application of brass paste; note crateriform ulceration in actively diseased area. 4. On discharge.

The Brass Treatment of Tuberculosis.

In 1917 I had the good fortune to meet Dr. Ellis. Unconscious of the work already done by German and other workers, he had alone and independently discovered the value of suitable copper preparations, and had evolved and elaborated a treatment and technique which was apparently safe in operation and produced results more convincing and more favourable than any I had observed in Germany.

Single-handed he had performed the necessary animal experiments essential before his preparations could be applied to the tuberculous human subject. His preparations caused comparatively little pain in application, and in addition had always proved innocuous. The combination he introduced of trinitrophenyl with brass represented a very considerable advance, inasmuch as it appears to have limited the danger of constitutional disturbance, of activation of distant tuberculous foci, or of metastatic development.

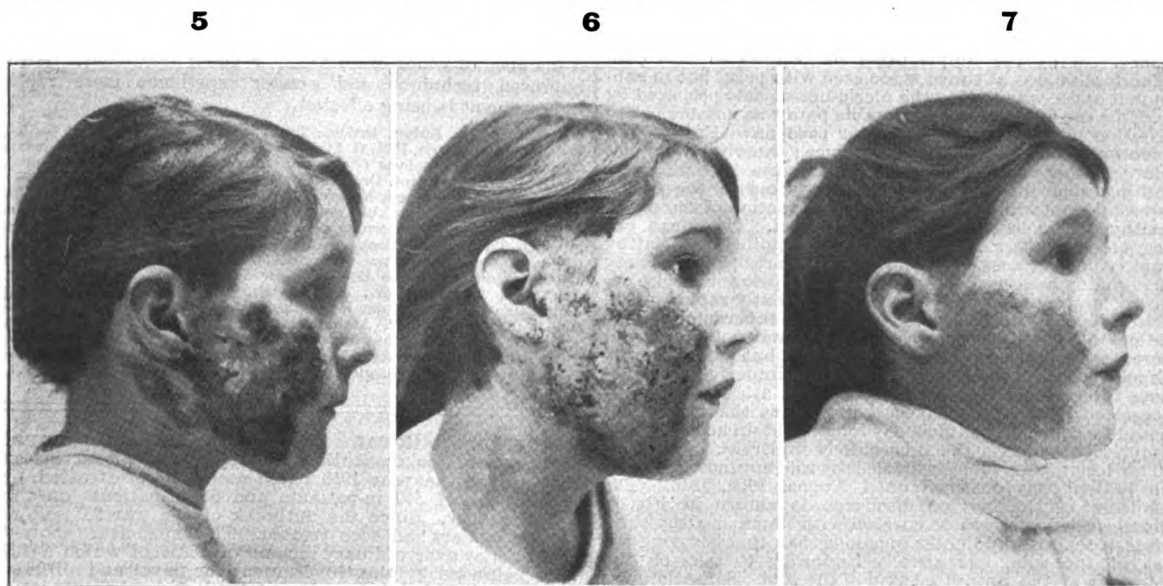
Many of the results obtained at Alton have been impressively favourable. Caution has been exercised in the application of this new therapeutic measure and the cases have been very carefully selected. Probably even more striking results might have been obtained had greater boldness been permissible, but the necessity of the greatest

care has been ever borne in mind. In cases where rapid improvement has not been obtained this method of treatment has been abandoned until further experience justifies more extended trial, but in no case with the caution exercised have any ill-results been discoverable, and it appears that we may reasonably hope that a substantial advance has been made in the treatment of tuberculous disease. Further investigation is proceeding on the treatment of deep-seated lesions which will be the subject of later reports.

It may be here mentioned that the chemotherapeutic treatment of tuberculosis appears to be most effective when associated with the simultaneous application of heliotherapeutic measures effected under favourable hygienic conditions.

In this paper I present reports of two cases of external tuberculosis; in the first the result has been entirely favourable; in the second treatment has not been completed, but substantial progress has been made and treatment is proceeding.

Details of the technique are given in Dr. Ellis's contribution and need not here be repeated. As to the final results and possibilities of relapse, no opinion can yet and for some



5. I. J., on admission. 6. After application of picric-brass paste; note sieve-like ulceration. 7. Condition on Jan. 15th, 1919; treatment still proceeding.

time be authoritatively expressed. It has always to be remembered that tuberculous disease is a generalised infection of which any particular lesion should but be regarded as a local manifestation. The cure of such a lesion cannot therefore be necessarily associated with elimination of the disease, but there are indications that by the chemotherapeutic method it may be possible eventually to rid the sufferer from tuberculosis as effectually of his infection as specific drugs can eradicate the disease in syphilis. Very much must be done before this can be accomplished, too great caution cannot be observed, but even with these limitations optimism is permissible, and the brass treatment of tuberculosis foreshadows possibilities in the future which may be hoped for if not expressed.

It may be observed that Dr. Ellis uses cod-liver oil as the base of his preparations. Confirmation of the specific effect of cod-liver oil, used in a form known as sodium morrhuate, is afforded by Sir Leonard Rogers's recent work, which is supported by the observations of others.⁶

Account of Cases.

The following are the notes of Case 1:—

CASE 1.—A.B., admitted April 27th, 1916, with tuberculous ulceration of the plantar surface of the right foot extending round to the dorsum. (See Fig. 1.) Condition said to have existed for eight years, and to have resisted all treatment. Amputation of little toe had been performed and amputation of foot had been advised. Patient was sent to Alton in the hope that amputation might be avoided.

On admission the child's general condition was fair; he had a tuberculous eruption on the trunk and a tuberculous ulcer over the external condyle of the left femur.

With graduated sun treatment the patient's general condition greatly improved, the eruption on the trunk gradually disappeared, the ulcer on the femoral condyle healed completely, but, though heliotherapy was well tolerated and pigmentation satisfactorily established, the plantar ulcer could not be completely healed. Both during the summer of 1916 and of 1917 the improvement in the condition of the foot became marked, but though healed in the centre it continued to slowly extend at the periphery, and with the cessation of heliotherapy retrogression was always noted. The condition of the foot on Dec. 15th, 1917, is shown in Fig. 2.

On Dec. 28th, 1917, brass paste was first applied and thereafter every two days, alternating occasionally with brass oil, until Jan. 23rd, 1918. The ulcer had not then healed, but it was healthy in appearance and treatment with brass was discontinued for one month. Thereafter only occasional applications of brass paste were made, to observe more closely the effects produced. The condition at the beginning of April, 1918, is shown in Fig. 3.

The reaction which followed the application of the paste may be described as follows. The diseased area to which the paste had been applied became red, engorged, the former purulent discharge was replaced by a clear exudate and there was marked crateriform destruction of the tuberculous infiltration. In other words, in the part diseased there appeared the phenomena associated with aseptic inflammation proceeding to cellular necrosis in the tuberculous tissues. With the simple brass paste used in this case inflammation was at times associated with pain, but in subsequent cases, when using the picric-brass paste prepared by Dr. Ellis the absence of considerable pain was notable.

Neither in this nor in any other case have I noted any exceptional constitutional disturbance; the liver was not enlarged, there was no tenderness in the hepatic area. Nothing abnormal was found at any time in the urine. Especially noteworthy was the selective action of the paste, healthy tissue being in no way affected. The clean cut ulcers formed after the paste had been applied had healthy granulating surfaces, in some cases the areas immediately surrounding became somewhat livid in appearance, were engorged, and exuded clear serum. Subsequently rapid healing occurred except in those areas where the tuberculous tissue had not been completely destroyed. It was notable that in some cases the ulcers formed healed, but subsequently broke down. Doubtless, owing to imperfect contact some tuberculous nodules had not been attacked and disintegrated. This fact makes it important that treatment should be continued sufficiently long to obtain access to and completely eradicate the tuberculous infiltrate.

The lesion was soundly healed by midsummer, 1918, but the patient was detained until August 19th, 1918. The condition of the foot on discharge is shown in Fig. 4. The ulcerated surface was covered with sound, healthy skin, softer in texture and lighter in colour than that covering the rest of the sole, but already beginning to take on the character of the uninjured skin of the sole. Sensation was normal and the boy able to walk naturally without limp and with no discomfort.

It should be added that heliotherapy was combined with the chemotherapeutic measures employed in this case with, I believe, great advantage to the patient. Sun treatment aided in the healing of the ulcer and was of great advantage to the general condition of the patient. There was no keloid at all in the scar. It will be also observed that there was an indication of commencing normal pigmentation in the skin covering the formerly ulcerated area.

The chief points of interest in this case are:—

1. The brass paste was chemotherapeutic in action; it instantly attacked and speedily destroyed the tuberculous infiltrate to which it had access; it was specific and selective; it had no action on the healthy skin; it was innocuous.

2. With chemotherapy alone the ulcer would probably have healed, but the combination of chemotherapy and heliotherapy was particularly advantageous.

3. Sun treatment alone healed the trunk lesions and small femoral ulcer and immensely improved the general condition of the patient.

4. The plantar ulcer improved under sun treatment and possibly would have eventually healed by this method of treatment alone, but the very slight penetrability of the ultra-violet light rays only permitted very slow improvement and did not prevent some extension of the ulcer at its periphery.

The second case is now recorded.

CASE 2.—Patient I.J. admitted with extensive lupus of right cheek and two separate lupus areas, one below right ear, the other under the chin. Fig. 5 illustrates appearance before treatment commenced. I reproduce the following extract from my notes of this case:—Sept. 12th, 1918: Treatment commenced. Picric-brass paste applied. Sept. 18th: The whole of the affected areas are markedly inflamed; there are many bleeding points on the surface. The periphery is less "heaped up." There are numerous punched-out ulcers, most marked at the periphery. Sept. 30th: The affected areas are not so inflamed. They are pale pink at the periphery and more anæmic centrally. There are numerous small punched-out ulcers circular or irregular in shape. There is no pus, but a film of glairy fluid over each ulcer (Fig. 6). Oct. 12th: Marked improvement. Periphery still slightly thickened, some keloid, no ulceration. Subsequently improvement was slower, occasionally ulcers again formed. Skin remained injected, but the redness and thickening was markedly diminished after application of blue paste (copper oleate), as advised by Dr. Ellis. Jan. 15th, 1919: While condition has very markedly improved and there is no ulceration the tubercle is not yet eradicated (Fig. 7). The skin remains somewhat injected and nodules can be seen and felt, most marked at the periphery. In fairness it should be explained that the photograph (Fig. 7) does not do adequate justice to the improvement effected.

Treatment is being continued and picric-brass paste again being applied. Further nodules are being broken down and improvement is maintained. The lupus patches below the ear and under the chin are now hardly visible.

In this case no light treatment was employed. When treatment is completed it is hoped to report the case further. A number of other cases are now under treatment. With improved technique and greater experience more rapid improvement is being effected.

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ABERDEEN ROYAL INFIRMARY.—At the annual meeting of this institution the report submitted stated that during the year 1918 15,810 patients were treated, or an increase of 349 in-patients and 6 out-patients on the previous year. Since the outbreak of the war 987 sailors and 773 soldiers had been treated. The expenditure showed a deficiency over ordinary income of £6236, of which £4400 were refunded by the Government for naval and military patients. The convalescent hospital still showed an accumulated debt of considerably over £2000.

PICRIC-BRASS PREPARATIONS IN THE TREATMENT OF LUPUS

AND OTHER FORMS OF TUBERCULOSIS.¹

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THE more exact scientist looks with suspicion on empiricism, and yet empiricism has been the road that medicine has most generally followed. This is by way of apology for the present paper, the result mainly of empirical deduction, and though the road has been long, tortuous, and inexact it has opened up possibly a path of some importance.

Earlier Observations.

The control of the damage caused by the *Bacillus tuberculosis* and its products has always appeared to me exceptionally difficult. Some 30 years ago, before opsonic indices and antibodies, I said: "The direct destruction of the bacillus was unthinkable, as it seemed impossible to suggest anything for its elimination without destroying the tissue in which it was embedded." So in investigations then I gave up all study of germicidal action and devoted my attention to increasing the resistance of the tissues. Even when Koch's tuberculin came out I was not swept away with the current, and it was not till reading Riviere's and Morland's work on tuberculin that I grasped the true inwardness of Koch's discoveries.

I had long held that, even if some method of eliminating tuberculous conditions was discovered, it must be demonstrated by the cutaneous manifestation. When first attacking the problem in England I was glad to have an opportunity of doing so in the many forms of lupus seen at the dispensary, for studying which in Australia I had little opportunity. For the last four years most of my original work has been devoted to that side of the disease. I looked on the lupus question as the direct progression of the study I had given to the cutaneous reactions to tuberculin, already published.² The study of these cutaneous reactions led to a general recognition that tuberculous cutaneous deposits were of much wider distribution than was generally supposed, that nearly all cases of phlyctenular disease and many cases of blepharitis were hypersensitive, suggesting the recognition of their tuberculous origin. Treatment on these lines leads to rapid and permanent cure. This time has amply confirmed.

But the question still remained unsolved how to get rid of heavier and more extended deposits displayed in more regular forms of lupus. The question here was the destruction of the tuberculous tissue, even if it entailed the healthy tissue in which it was embedded. Most modern methods aim at this destruction, and they all destroy a certain amount of the healthy tissue. An attempt was made to achieve this result by pressing the destructive action of tuberculin to the limit. In the cases where failure or auto-intoxication was produced a considerable series of observations led to the conclusion that a certain combination of basic salts of sulphate of copper and zinc, when combined in an oily medium at definite temperature, gave a much more regular result than anything I had used up to date. I call this preparation brass paste.

Brass Paste.

The combination is definite and chemical and approximates an old formula for making brass. It is formed by combining basic copper sulphate with basic zinc sulphate in the proportion of 86 per cent. basic copper to 14 per cent. basic zinc. The basis of the preparation has been used by me for many years in intractable chronic eczema, nearly always with success. It had considerable restrictions in lupus, but a continuous series of experiments has gradually eliminated them. This paste is easy to apply. When the covering plaster is removed after 48 hours the tuberculous tissue will be found extensively destroyed and removable as small caseating nodules, while the uninfected tissue is uninjured. The caseous material is often stained with the preparation, but the healthy tissue is not. This localized

destruction gives a curious and characteristic appearance, especially in verrucosa. Where the tuberculous deposit is superficial and limited comparatively few applications destroy the growth, but in the majority of cases many applications are necessary. The problem is only one of contact; if contact can be obtained the result is always assured.

The paste is quite innocuous to healthy tissue, it can be placed in the eye without causing other than temporary irritation, easily controlled by first instilling eucaine and adrenalin. This is shown in a case cured by the application of the paste to the conjunctiva of the everted eyelid, resulting in removal of all tuberculous tissue. The case was of over 20 years' duration, and as she was employed in a hospital, had had many treatments. The paste can also be applied to the nasal mucous membrane without producing any reaction unless the tissue is invaded by tubercle. But if the nasal mucous membrane be involved caution must be used or it is apt to produce headaches, which may be very serious if the nasal fossæ are involved. Ordinary ulcerated non-tuberculous surfaces are not affected by the application, and it has apparently little effect on their progress. In case of doubt an application of the brass ointment will soon settle the matter.

In the earlier investigations, as has been so frequently the case with lupus, the results were unequal; and certain disadvantages delayed the publication of the method. The most serious and difficult was a tendency to light up some quiescent focus. These local manifestations were sometimes accompanied by certain constitutional results. This position has now been remedied by the addition of trinitrophenyl.

Brass Oil: Addition of Trinitrophenyl.

It was at first difficult or impossible to reach the deeper deposits. Then there were also the various thickenings of the cutaneous and other tissues of a lymphatic or glandular nature so intimately associated with tuberculous lesions, which were uninfluenced by the earlier preparations. The superficial tubercular abscess presented certain problems, all its own, especially the cold, small, non-spreading tubercular abscess formation limited to the skin entirely, which is not usually accompanied by glandular enlargement. It is often multiple, and this condition, for purposes of differentiation, I call intradermic abscess, as a distinct division of lupus. The nature of their tubercle bacilli is now being investigated by Dr. Stanley Griffiths, of Cambridge. These abscesses are surrounded by healthy tissue, and there is little or no tendency to invade the adjacent area. They are very difficult to heal and leave many of the unsightly scars. They are placed under the head of scrofuloderma, but the absence of glandular enlargement precludes that term. They are invariably tuberculous, and the majority up to the present have been due to the bovine bacillus.

For these conditions a suitable medium is a fluid preparation called brass oil, or, shortly, "bro." Its extensive and general application has produced many unexpectedly favourable results. This oil, transparent and green in colour, is produced at a definite temperature, over a considerable period, and is applied on gauze covered with jaconet and left on from two to seven days. Definite constitutional symptoms indicated that it is partly absorbed along the line of the lymphatics, though these may largely be due to the resolution and absorption of the tuberculous materials. The conditions which yield most readily to its influence are those produced by lymphatic thickening, especially the condition constituting pseudo-elephantiasis, of which one case is illustrated (Figs. 1-4), as well as the general thickenings in scrofuloderma. The swellings in the neighbourhood of joint or bone disease are also reduced by it; in fact, all swellings produced by lymphatic obstructions, the result of tuberculous invasion. It was the early investigations of the bro treatment that brought most into prominence the lighting up of distant foci and the constitutional disturbances.

On further investigation it was found that the trinitrophenyl or picric acid series had a distinct action in controlling these conditions, and extended observations—not yet completed—resulted in a further addition of a definite proportion of trinitrophenyl to the brass preparations. After this addition metastatic developments entirely ceased, and cases of pallor and loss of weight no longer occurred, but distinct improvement of the general appearance and health. The specific action of the brass treatment was materially increased, an unlooked-for and very gratifying attainment.

¹ A paper read before the North of England Tuberculosis Association.

² THE LANCET, 1916, II., 638.

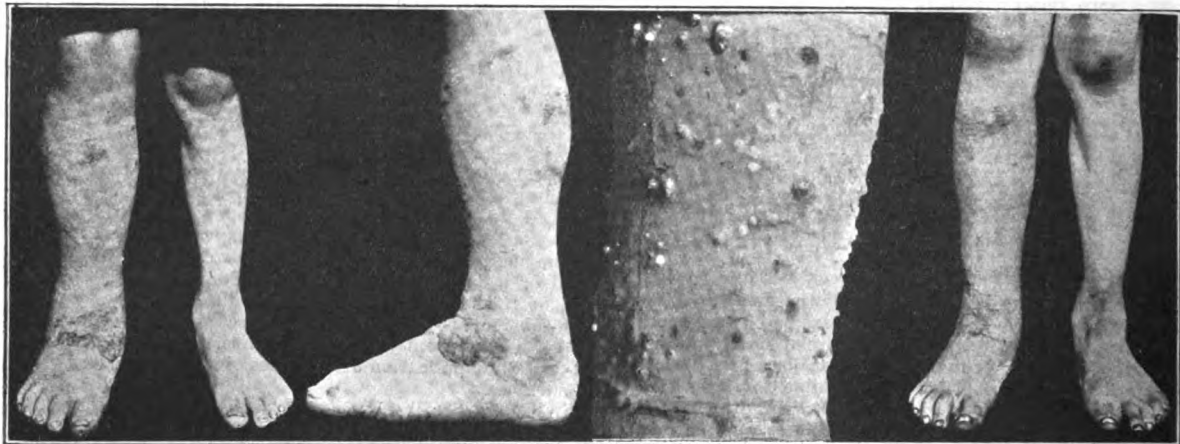
Tuberculous Pseudo-Elephantiasis. Four years' duration. Leg hard and solid. Treated with brass oil (bro).

1

2

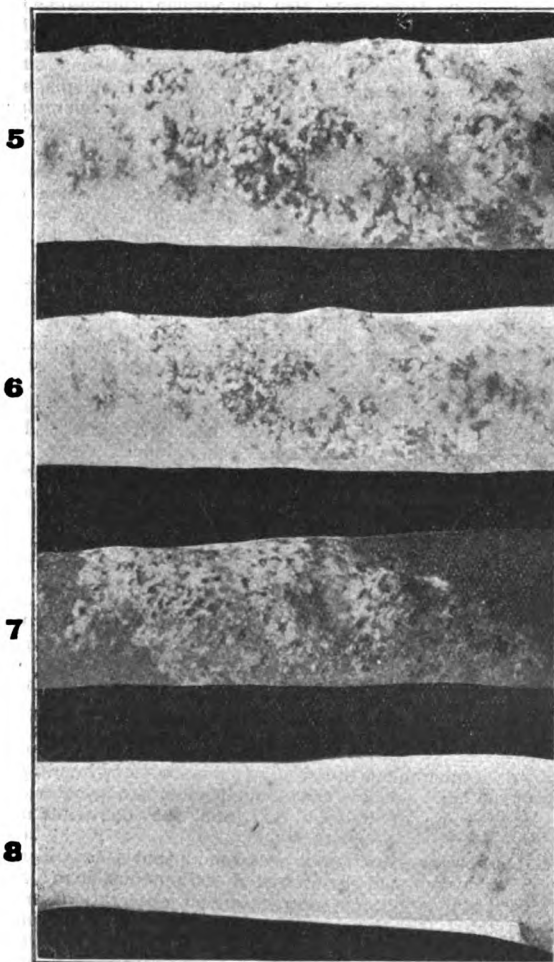
3

4



1. Before treatment, showing comparative size. 2. Side view, showing warty growth before treatment. 3. Showing discrete caseating nodules of tuberculous matter produced by treatment; elevations are soft and caseous. 4. Leg after eight months' treatment; wart gone; tissue soft and pliable; size reduced, but still larger than the other; present condition almost normal.

*Extensive Lupus Verrucosa both sides of forearm.
Fifteen months' duration.*



5. Showing character of growth, with islands of resolving tissue during treatment. 6. Islands further developed. 7. Pitting caused by caseation of tuberculous deposits caused by application of brass paste. 8. Case completely cured; time between Plates 5 and 8, four months.

But in certain individuals a superficial dermatitis limited the use of the new remedy, although the condition was very rapidly relieved by soda-bicarbonate solution. No effect is exerted on the deeper tissues, as was seen when trino or picric bro was injected into abscesses or sinuses.

By the time these experiments were completed a most valuable clinic had been acquired by the gradual selection of refractory cases, out of some 150 examples of cutaneous tuberculosis. At the present time there are still some six or eight more or less refractory cases of extreme value for observation purposes, but they are a rapidly diminishing series. [Recent observations have diminished these now to the vanishing point.]

Efficacy of Remedy.

One of the means of testing the efficiency of the remedy is as follows. When a smear of caseous material from a tuberculous deposit is made on ordinary Dorset egg medium, a slight guttering is often produced due to its solution. This is probably due to the action of trypsin or some other ferment released by the process of caseation. This guttering did not occur when the brass media were mixed with the pus of ordinary abscesses. Accurate determination has yet to be made, but it has proved a good rough-and-ready method of testing the efficiency of the various products during the search for increased efficiency, and when compared with the tissue destruction effect proved fairly reliable.

By using these preparations it was easy to obtain pure cultures of the particular organism causing the disease, proving also that the remedy was not immediately destructive to the life of the bacillus, but a series of observations showed the gradual breaking up of the organism. Time has only allowed this casual observation, but the process of obtaining pure culture from tubercular growths by this method is so accurate that I was recently able to forward 16 out of 17 successful cultures to Dr. Griffiths to have the variety of tubercle definitely classified, and if possible to have the attenuation or otherwise determined.

After considerable investigation the preparations have been found innocuous except when tubercle has been present. The various preparations have been injected in man and animal, both intravenously and subcutaneously, in considerable quantities without producing unpleasant symptoms. The subcutaneous application of the paste in large doses in the guinea-pig demonstrated that the material was decomposed, and apparently some variety of yellow material (copper?) was deposited along the course of the lymphatics, showing a very interesting pathological preparation.

The next step was to see if it was successful in the hands of others. I first asked Mr. H. J. Gauvain, of Lord Mayor Treloar Cripples' Hospital, to coöperate with me, as his

unrivalled material in bone tubercle cases and his wide experience made him an ideal judge. My own cases of bone tuberculosis, limited in number, have been successful, sometimes dramatically so. Mr. Gauvain has investigated in this direction much more extensively, and his reports to date have been most encouraging. Several of those present have also seen the results in visits to my dispensary, and some have made tests, and up to now all reports but one have been favourable.

Led by the results of the effect in experimental tuberculosis in animals, I have for some time been using it in

lymphatic engorgement, and is applied twice weekly, and should cover all round the neck from ear to collar bone. The staining of the skin is easily removed with vaseline. The trino-bro is the best preparation for these cases unless they are picric sensitives, which is rare.

The lighting-up of phlyctens must always cause temporary discontinuance of the treatment. They should be treated with tuberculin as described in THE LANCET,³ or by a dilution of picric bro 1 part, to cod-liver oil 3 parts, brushed on with a small camel-hair brush after the eye has been made anæsthetic. These phlyctens are liable to occur in nasal

Face Lupus Vulgaris. Nine years' duration. Previously treated by X rays, freezing, &c.

9

10

11



9. Before treatment.

10. During progress; ulceration defined.

11. Five months after.

other forms of tuberculosis, notably abdominal, with satisfactory results. The exact method and dosage is still a matter for investigation. Observations have shown that very small doses by the stomach produce gastric irritation. The whole question is a matter for a further communication.

Methods of Treatment.

So far one may say that the brass treatment leaves available four preparations of specific potency in tuberculous deposits. These preparations are: (1) Brass paste, an oily preparation of a compound of basic sulphate of zinc and copper; (2) brass oil or bro, a preparation of the soluble portions; (3) and (4) both these preparations, in combination with approximately 1 per cent. of trinitrophenyl, called respectively trino-brass and trino-bro. Great care is needed in preparation as they are easily decomposed and rendered inert at comparatively low temperatures, the whole process going into weeks. Instability is naturally a condition, for, if the combinations were not weakly allied they presumably would not obtain their specific action. These preparations are more efficient, especially in facial cases, when mixed with adrenalin and cocaine or eucaine.

As far as ascertained, the remedies are entirely innocuous to the non-tuberculous except when given by the mouth. With the tuberculous hypersensitive care in applying the simple brass preparation must be taken to avoid auto-infection from tuberculous absorption, producing loss of health, lowered weight, pallor, and metastatic abscesses. But generally ample warning is given. This danger does not hold of the trinitrophenyl remedies, but here the picric sensitiveness of the external cutaneous layers must be watched for. I am inclined to think that picric sensitiveness encourages local tuberculous extension in cases showing it.

The application of the brass paste is made every two or three days under zinc plaster. The bro is applied either as a foment on gauze with jaconet covering once, twice, or thrice weekly, as indicated, or only painted on the skin when a rest from active treatment is required. The bro collar is the most efficient way of dealing with glands of the neck or scrofuloderma; it very rapidly diminishes the

lupus, especially of the interior mucous membrane. Outside these precautions I know of none other, when the remedy may be used with the greatest freedom. Another refractory condition amenable to treatment is dactylitis. The swelling reduces, and unless the bony enlargement is great the finger returns largely to a usable condition.

Note.—Arrangements have been made whereby a supply of these preparations can be obtained from Mr. Jack L. Robinson, pharmaceutical chemist, Middlesbrough, Yorks.

³ THE LANCET, 1917, II., 157.

THE HYSTERICAL PERPETUATION OF SYMPTOMS.

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MUCH has recently been written concerning the treatment of hysterical disorders in soldiers, especially at neurological centres. There is great scope for similar work in general hospitals; the same methods will effect very marked improvement, and even cure, in cases not usually regarded as hysterical.

All surgeons are now familiar with the type of case in which improvement, not amounting to complete recovery, follows a nerve suture, yet there may be much more recovery than is apparent, masked by what is now an hysterical disability. Similarly, many abnormal gaits, following severe organic lesions, are hysterical. Rapid improvement, even amounting to cure, can be obtained in a few minutes or hours by methods similar to those employed to-day in the treatment of hysterical disorders, and summed up in the word "psychotherapy."

In treating these conditions there is one factor indispensable to success—i.e., the patient's own belief that he can be cured. At neurological centres this point is gained by the "atmosphere of cure" prevailing. The patient is in a ward with others who until recently were, they tell him,

just as bad as he is. They have been cured, everybody who comes there is cured, and the newly admitted patient soon views his own case as one in which cure will be effected also.

My own experience has been gained largely at an orthopaedic centre, and at such centres there is apt to be an atmosphere of chronicity. A patient with, say, an hysterical drop-foot is mixed with the crippled and patients whose recovery must be a matter of months. It is hard for him to believe that his foot is curable in an hour, and it is impossible for him to expect it. But by putting him into a ward amongst others like himself, some already cured, his views may be altered. Such a patient if put to bed in these surroundings for 48 hours will be found confident of speedy recovery when he goes to the treatment-room at the end of that time. All that are then needed are persuasion and re-education and a large store of patience.

Hysterical Disabilities.

As examples of hysterical disabilities thus treated I will cite the following case:—

CASE 1. *Scoliosis of nearly four years' duration with 2½ in. apparent shortening of left leg, cured in 70 minutes.*—Fig. 1 A shows a patient with well-marked scoliosis of nearly four years' duration, following a blow on left side of pelvis. The pelvis was tilted; 2½ inches of apparent shortening of the left leg. For three years a surgical boot with a sole 2½ inches thick had been worn on the left foot. Whilst wearing this boot he did not limp, but the scoliosis was more marked. He believed himself to be a permanent cripple. Fig. 1 B shows the spine perfectly straight after one hour and ten minutes' treatment by manipulation and persuasion. He could then walk and run normally with no limp, in ordinary boots.

CASE 2. *Contracture of hand of three years' duration cured in 40 minutes.*—Fig. 2 A shows a contracture of right hand of three years' duration, following a through-and-through bullet wound of the arm. Patient was seen in conjunction with Major J. L. Joyce, R.A.M.C.(T.). Patient had been

deafness, mutism, tremors, vomiting, abnormal gait, &c., with which the war has made all medical officers familiar.

Hysterical Perpetuation of Symptoms after Organic Lesions.

The point I wish to emphasise is the wide scope for such work in cases not usually regarded as hysterical, and which seldom reach the neurologist. There has been some severe organic disability with only partial recovery. There is a

FIG. 3.

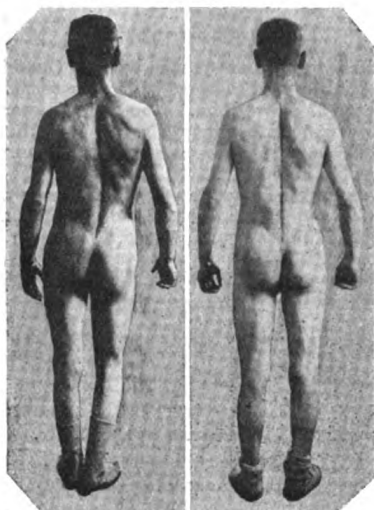
A *J. Lown*
B *J. Lown*

Tremor, patient also stammered. Duration 16 months. Treatment 40 minutes. Stammer also cured (Case 3).

tendency to ascribe this remaining disability to permanent organic damage, and the cure is much slower or less perfect than need be. But it is frequently functional. The following case is an example:—

CASE 4.—Wounded in October, 1917. Bullet entered the chest at posterior axillary border about 2½ inches below acromion process on left side. It passed forwards and inwards, damaging circumflex nerve, and lodged just behind second rib on left side, near sternum. When first seen by me 13 months later, he was able to perform only limited

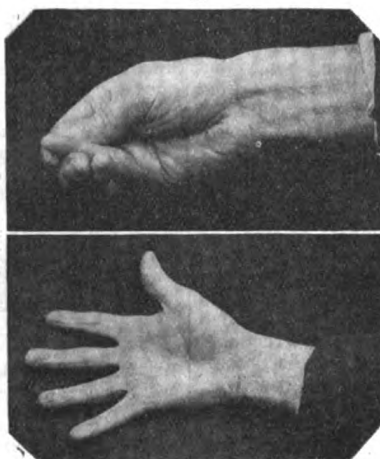
A FIG. 1. B



A, Lateral curvature (spine marked out with grease pencil); duration 4 years. B shows the condition after 70 minutes' treatment (Case 1).

FIG. 2.

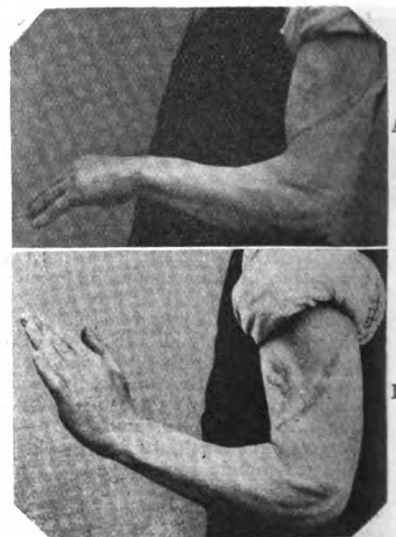
A



B

A, "Wooden" rigidity of hand; no movement at all; duration 3 years. B shows the result of 40 minutes' treatment (Case 2).

FIG. 4.



Musculo-spiral nerve divided by missile; nerve suture. (Case 5.) B shows extension voluntarily performed after 35 minutes' persuasion and education.

invalided out of the Army as a permanent cripple with pension for 40 per cent. disablement over a year before he was sent to an orthopaedic centre for treatment. The hand was blue, oedematous and shiny, and absolutely rigid, the fingers being immovable owing to intensity of spasm. In Fig. 2 B he is holding his hand open, after 40 minutes' treatment. He was then able to perform all movements of the hand normally, and the photograph shows the wrinkling of the skin of the fingers which followed the disappearance of the oedema.

CASE 3. *Hysterical tremor of 16 months' duration cured in 40 minutes.*—Fig. 3 A is the signature of a man with tremor which he had had for 16 months following a fall down a ravine in the dark. The tremor was very quickly overcome (Fig. 3 B) as soon as full muscular relaxation was obtained by manipulation and persuasion in 40 minutes.

Such cases are purely hysterical. Many other cases could be quoted of the hysterical paralyses, contractures, blindness,

abduction of the left shoulder, the arm not coming up to the horizontal in spite of obvious efforts. Very marked wasting of the deltoid, which only responded feebly to strong faradism; some blunting of sensation over it. Improvement having ceased, he had been discharged from hospital many months previously; the loss of power was thought to be due to the wasted deltoid. After a quarter of an hour's treatment by manipulation and persuasion he was able to raise both arms smartly and bring his hands together over his head without flexion of the elbows or wrists. The left deltoid was still much weaker than its fellow and there was still imperfect sensation, but recovery had been masked by a superimposed hysterical condition.

The following case illustrates a similar state of affairs following nerve suture:—

CASE 5.—Wounded by a shell on April 8th, 1917. The wound was 3 inches above the left elbow; compound com-

minuted fracture of humerus and complete division of musculo-spiral nerve. The wound was septic; after about three weeks several small pieces of bone were removed under an anæsthetic. In three months the humerus was soundly united, with practically perfect movements at the elbow-joint; the wrist-drop was controlled by a "cock-up" splint. In August, 1917, suture of musculo-spiral. Nerve found completely divided; bulb at each cut end. The two bulbs were excised, leaving a gap of about 2 inches; end-to-end suture; considerable tension at point of union. The wound healed by first intention. Three months later there was some return of voluntary movement in the extensors and the analgesia was less marked. Twelve months after the nerve suture there was 50 per cent. of recovery in the extensors and sensation was normal. Massage, galvanism, faradism, ionisation, and electric baths, persisted in all this time, produced no further improvement and he was discharged from the Army in October, 1918.

When I saw him first, soon after Christmas, 1918, there had been no further improvement since August, 1918. He was able to make some extension of the wrist and of the fingers; movements were jerky, accompanied by some spasmodic contractions of the flexors. In Fig. 4A the scar of the operation for nerve suture can be seen above the external condyle. The photograph was taken whilst the maximum amount of extension of the wrist and fingers was being made. He was treated by persuasion, manipulation, and re-education for 35 minutes, when voluntary extension was as shown in Fig. 4B. Movements were now smooth and easy, and he was able to use his hand normally, the total recovery from the original lesion being practically 100 per cent.

CASE 6.—Patient, aged 37, sent to me with the following history:—Three and a half years previously he had had an acute illness; the main characteristics were slight pyrexia and general malaise, pains in legs, some difficulty with bladder, and increasing weakness of legs. He was in bed for about three months. The symptoms largely subsided, but he was left with the "weak legs," and his back was bent. On examination he was very bent, and hobbled with two sticks. The legs showed the signs of a lesion of the lateral tracts, weakness, spasticity, exaggerated tendon jerks, clonus, and a bilateral extensor response; abdominal reflexes absent. His condition had been *in statu quo* for about two years; yet a great part of this, in spite of its organic basis, proved to be the perpetuation of symptoms by suggestion. After manipulating the legs and back, with persuasion to increase the range of movement voluntarily, for half an hour, the patient was able to stand upright and to walk without sticks. There was still some spasticity of the legs, but it was not very noticeable except when he tried to run. He was delighted with his improvement, and took some pride in exhibiting it to others. The physical signs were, of course, unaltered.

Conditions in which Functional Disabilities Occur.

The last three cases are instances of the hysterical perpetuation of symptoms long after the original causes for them had disappeared. This is really a very common occurrence, and many similar cases might be cited. In a multiplicity of conditions this is liable to occur, especially in those which run a chronic course; nerve suture, neurolysis and capsulotomy of a traumatic neuroma must be especially mentioned. Disordered gait is perpetuated after fractures and injuries of the lower limbs; sciatica is also specially liable to produce this condition of affairs, and many other diseases with a chronic or semi-chronic course.

Several factors help in suggesting the perpetuation of symptoms, as, for instance, the use of crutches and sticks. An officer had his foot severely crushed by a motor lorry, but there was no fracture or dislocation. An extensive ecchymosis of the dorsum cleared up in some three weeks, but he was unable to bear any weight at all on the foot when he got out of bed, and he asked for a pair of crutches. After 10 minutes' practice, however, with persuasion and encouragement, he was able to walk and even to run normally without limping, and there was no pain in the foot. On the following day he voluntarily went for a walk of six miles. In this case, only one of many, it is probable that had the patient been given a pair of crutches the idea of the disability would have been confirmed, and a disordered gait would have resulted when he discarded them after, perhaps, many weeks or months. Many other things may be the means of suggesting a perpetuation of a disability, and in some cases it is, no doubt, due to auto-suggestion.

A very large number of chronic cases of all kinds will amply repay time spent in treating what are really hysterical disabilities. Much patience and painstaking are needed, but great improvement can be effected, and sometimes complete cure.

AN INVESTIGATION OF CASES OF INFLUENZA

OCCURRING IN THE WOOLWICH DISTRICT DURING SEPTEMBER, OCTOBER, NOVEMBER, 1918.

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ATTACHED R.A.M.C.;

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Introductory.—During the summer of 1918 it fell to the lot of one of us (B.H.) to investigate the then prevailing and mild epidemic of "influenza." The results were not published, but briefly, though proving interesting as regards the effect of this disease on the leucocyte counts, they were entirely negative as regards the isolation of *B. influenza*. In making this the second series of researches on influenza the first thing that we wish to insist upon is that we have used *exactly the same methods and the same blood medium* (Gordon's tryptic agar plus rabbit's blood) in investigating this epidemic, as in the mild one dealt with in the summer. In addition, we have examined the claims of a medium which was highly recommended by Dr. John Matthews¹ as suitable for *B. influenza*.

Our researches have been conducted *without selection of cases*. That is to say, except for refusing to examine material sent under conditions impossible for good bacteriological work, we have taken and examined anything sent down to us that seemed to offer possibilities.

General technique.—Sputum has been collected where possible in wide-mouthed sterile bottles with rubber corks. These were distributed to the ward sisters with instructions to send the first sample coughed up and not to collect a lot. This sample was then washed in sterile broth and plated out on tryptic agar plus rabbit's blood. The broth washings were also incubated. In some cases it was plated out also on Dr. Matthews's medium. Direct smears were examined also in every case. Naso-pharyngeal cultures were made with West's swabs and inoculated on to the media *at once* where possible.

Blood cultures were taken by venepuncture in the ordinary way and 10 c.cm. was distributed in varying amounts into broth tubes.

Results.

Naso-pharyngeal swabs.—The naso-pharynx in all cases seen by us has been injected and very sloppy. A prominent feature is the greatly swollen and elongated uvula, and to this uvula must partly be attributed the irritable cough and retching in many cases. Some cases have epistaxis from the great engorgement of the parts. Naso-pharyngeal swabbings have been positive for *B. influenza* in 80 per cent. of cases. Other organisms have been present, such as *M. catarrhalis*, pneumococcus, streptococcus.

Sputum.—The sputum has varied greatly. Some specimens have been thick, sticky, and stained with blood to varying degrees. This blood staining is not the "rusty" staining of croupous pneumonia, but something much brighter and in some cases amounting almost to hæmoptysis. Other specimens have been of a yellow-green "nummular" type, while others have been white and slimy. Generally speaking, we consider the white slimy specimens occur just at the beginning and when the case is clearing up, particularly the latter. The blood-stained ones indicate pneumonia, or at least severe capillary bronchitis, and that the man is a case to be anxious about. The yellow "nummular" ones seem to be chiefly where the trouble is mainly bronchial or where only a small broncho-pneumonia patch or so is present. We have seen rather more of the yellow "nummular" than the blood-stained type in the laboratory.

The result of examination of direct films of sputum has shown 70 per cent. positive for *B. influenza*, and of cultures from these same cases 75 per cent. positive. It has been interesting to us to find in some cases negative for *B. influenza* by direct film that the organism has turned up on culture. In one or two cases we failed to grow the organism in spite of its obvious prevalence as seen in the direct film. One may

say unhesitatingly that the pneumococcus has been present in 100 per cent. of the cases. In practically every sputum we have examined it has been predominant over *B. influenza*. Other organisms have been present, *M. catarrhalis* and mouth streptococci, but we have not been able to confirm the presence of any particular hæmolytic streptococci in our cultures as has been mentioned by some observers.

We would like to point out here what have been to us very interesting features in the bacteriology of the sputum. At first it was comparatively rare to find *B. influenza* in direct films, the pneumococcus always predominating, but as the number of admissions grew and the severity of the epidemic increased we began to find *B. influenza* readily, and isolated it easily. Even in mild cases now at the decline of the epidemic the *B. influenza* is readily found. This is in accord with what occurred in the great pandemic of 1888-92, for the bacillus was only found towards the end of the epidemic in 1892 by Pfeiffer.

Another interesting feature is the pleomorphic character of the bacillus in culture. It occurs in rods of very varying length (0.5-1.5 μ), and sometimes the bacillus is almost a coccus, so short is it. Again, it tends in some cultures to occur in pairs and short chains.

As regards the medium recommended by Dr. Matthews, we consider it fully bears out its claims, but we do not consider it superior to Gordon's tryptic agar enriched with rabbit's blood except in one useful detail, and that is that it does seem to inhibit for a time the growth of other organisms, enabling *B. influenza* to be readily isolated. Gordon's medium tends to grow everything with equal intensity, and so *B. influenza* is not so easily isolated free from other organisms.

Pleural fluids.—In the early part of the epidemic empyema was uncommon, probably because the cases with extensive lung changes did not live long enough to develop one. In the latter part of the epidemic empyema was more common. The fluids were of a yellow-green colour and rapidly separate out into a layer of slimy pus below and bright yellow fluid above. In direct films cocci in pairs and short chains have occurred in practically every case; capsulation was observed also. In one case chains of great length occurred, but the chains had the appearance of being made up of a series of pairs of cocci. In culture the cocci always grew in pairs and chains, these chains always being very much longer than any seen usually in the direct film, and some were of great length. Where the chains were of great length they always had the appearance of being built up of a regular series of pairs, and the appearance was quite different to the ordinary streptococcus. This organism appears to be either the *Streptococcus mucosus* or closely allied to it, and probably *S. mucosus* is a variant of *S. pneumoniae*. We had great difficulty in getting most pleural cultures to subculture freely even on blood media. In two of our cases we found *B. influenza* in the pleural fluid as well as *S. mucosus*. As regards hæmolytic properties on blood-smeared agar, our cultures varied even with cultures of apparently similar morphology. Some hæmolyzed fairly; others showed no signs of hæmolyzing; none hæmolyzed well.

Blood cultures.—Of all our cases these may be regarded as the only ones in which it may be said that they were selected, since medical officers only requested this in severe cases. We obtained 50 per cent. positive cultures, and these cultures showed cocci with somewhat similar characteristics as those described in the pleural fluids. In no case, however, did we observe such long chains as in the pleural cultures, and the chains more closely resembled those of *S. pneumoniae*. For some reason which we were unable to explain we could not get the organisms of the blood cultures to grow in subculture. The blood in the blood-broth mixture, however, did not undergo any marked hæmolysis even after four days.

Leucocyte counts.—We were able to confirm our previous results (summer epidemic) as regards the cases only affected by high temperature, pains, and no chest symptoms—viz., little or no leucocytosis, and generally a qualitative increase in the mononuclears.

In pneumonic cases ending fatally or cases of great severity we noticed that the leucocytes showed no increase, and in most cases a leucopenia, but that there was a qualitative increase of the polymorphonuclear cells. In one fatal case in which the blood culture was positive (pneumococcus) the count was as low as 3000 per c. mm.

In the average severe bronchitis or mild pneumonia case there was a quantitative and qualitative polymorphonuclear leucocytosis. The leucocytosis was moderate, averaging 18,000 per c. mm. 80 per cent. of our cases showed a leucocytosis.

Post-mortem and histological findings.—The first point we wish to make is that in no case did we see those appearances conjured up by the term "grey hepatization."

The average appearance of the lungs when removed from the thorax was that of an infant suffering from bronchopneumonia. In the very acute cases they resembled acute hæmorrhagic broncho-pneumonia. As a rule, one lobe (usually a lower lobe) was more affected than the rest, and if the case had lasted some days this lobe might be solid. The cut section of a solid area was firm, of a deep-red colour, more resembling liver tissue, and a frothy purulent fluid oozed from the bronchi. Here and there a small greyish area with a wavy outline might be seen, but we saw no evidence of actual breaking down of tissue. This greyish area marked, however, an intense exudate into the alveoli. In the very acute cases there was no particular affection of any one lobe, all lobes usually showing areas, varying in size, of intense engorgement resembling hæmorrhagic infarction. The pleura was usually involved over the lung or lobe most affected, forming in some cases a thick gelatinous layer of 1 to 2 inches. The trachea and bronchi were always intensely engorged and covered with a tenacious mucopurulent coating. The liver and kidneys usually showed slight toxic changes.

Microscopical sections showed intense engorgement and dilatation of capillaries and blood-vessels. In places, particularly in the acute cases, the blood has escaped into the alveoli, and gives the appearances seen in ordinary hæmorrhagic infarction (of mitral stenosis, &c.). The exudate in the alveoli is chiefly of alveolar cells and mononuclear cells. Polymorphonuclear cells are relatively few, and this is a very striking feature, even in the solid portions. In sections of bronchioles and neighbouring alveoli in apparently non-affected areas the capillary engorgement is very well marked. It is also evident from any section how the completely solid state of a lobe is arrived at; for one can see that certain neighbouring areas are more involved than others, and that the inflammatory condition has spread peripherally till such areas coalesced, and where such areas are numerous in any lobe it is obvious that the lobe will become eventually solid.

We would suggest that the mode of infection is probably as follows. Infection of pharynx and trachea (nearly all cases complain of rawness over larynx and sternum at onset) with *B. influenza* which rapidly spreads to bronchi, bronchioles, and alveoli. This "lowered resistance" of the respiratory tract leads to a secondary infection with pneumococcus and perhaps other organisms—i.e., *S. mucosus*. It is a well-known fact that mixed infections are more severe than pure infections, and to this we may attribute the severity and mortality of this epidemic. In short, we regard the infection as an acute capillary bronchitis and alveolitis.

We cannot confirm in our work the presence of any constantly hæmolytic streptococcus as has been described by some workers. We may have been unlucky, but it does not seem essential to consider a hæmolytic streptococcus as constantly necessary to produce the intense blood engorgement seen in the lungs. The microscopic appearances alone show that the blood in the alveoli has resulted from a rhexis of the enormously dilated capillaries. Again the epistaxis that occurs can be seen to come from intensely engorged nasopharyngeal vessels, and also the blood in the sputum is bright recent blood, not altered blood. This streptococcus is said by some to have been superadded as the result of the numbers of war wounds about, yet in peace time such appearances were familiar to every morbid anatomist.

We have been able to identify the "pneumococcus" in sections of the lung, but not *B. influenza*.

Summary of Results.

1. *B. influenza* was present in the sputum by direct film in 70 per cent. of cases and by culture in 75 per cent. of cases. Pneumococcus was present in 100 per cent. Other organisms of the *catarrhalis* type were present, and mouth organisms.

2. *B. influenza* was present in naso-pharyngeal swabs in 80 per cent. of cases.

3. In pleural fluids we found a pleomorphic streptococcus having many characteristics of the pneumococcus, but often occurring in chains of great length. Some cultures showed hæmolytic properties, others did not. We regard this as *S. mucosus*, which is a "variant" of pneumococcus probably.

4. Blood cultures were positive in 50 per cent. of cases and the organism was a pneumococcus, or a close ally of *S. mucosus* type.

5. A leucopenia was usually present in severe or fatal cases. In the average pneumonic case a moderate polymorphonuclear leucocytosis was present.

6. Post-mortem and histological appearances show the disease to be an acute capillary bronchitis and alveolitis.

We cannot conclude without reference to the assistance we have received from our laboratory attendant, L/Cpl. L. G. Blore. Our laboratory necessities throughout the whole of the epidemic were always forthcoming, and since this work was thrown on to the laboratory in addition to the routine work of the district, his success in this matter is one for which we desire to express our appreciation, and, indeed, was no small achievement on his part.

THE INFLUENZA EPIDEMIC IN BRITISH GUIANA.

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THE recent influenza pandemic appears first to have made itself manifest in Georgetown, the capital of the colony, in November, 1918. Clinically the symptoms do not appear to differ from those characteristic of the disease in other centres which have suffered its ravages. The disease has taken a fearful toll, more particularly of the lower classes of the community, the poor East Indian and black, generally already debilitated by the ravages of chronic malaria or filarial infection. Death has been due, in the vast majority of cases, to a rapidly fatal broncho-pneumonia, and the purpose of this article is to give a short account of the pathology and bacteriology of the disease in this country.

Post-mortem findings.—These are based on post-mortem examinations carried out on 24 fatal cases of influenza at the height of the epidemic. Generally marked cyanosis was present externally. Internally the pathological changes appear to centre in the respiratory tract; naso-pharynx, pharynx, larynx, trachea, and bronchi show congestion of the mucous membrane, with exudate varying to a certain extent in character, but generally tenacious and sometimes stained with blood. Pleurisy was rare, only being present in two cases, and then of the acute fibrinous variety.

The heart and pericardium showed no particular change. The lungs showed generally a broncho-pneumonia of the diffuse variety. If only a portion of a lung were involved, it was invariably the base, and a constant feature was the intense congestion of the lungs; the broncho-pneumonic areas, on section, are hard and reddish-grey in colour.

The brain was involved in only one case in a meningitis which proved to be of pneumococcal origin. The empyema and pyopericardium described as occurring in other parts of the world were never found. The spleen, when showing no evidence of malarial infection, was slightly enlarged, congested, and firm in consistence. An acute parenchymatous nephritis was present in a few cases. The liver showed frequently some fatty change.

Bacteriology.—An investigation was first carried out into the bacteriology of 13 cases of well-marked clinical type by means of post-nasal swabbing, as recommended by Matthews,¹ as well as by making films and cultures from the sputa. In these cases the culture-medium used was Matthews's tryptic blood-agar, using sheep's blood. From 9 cases of the 13 a bacillus morphologically indistinguishable from Pfeiffer's bacillus was isolated, in 2 cases in pure culture. A hæmolytic streptococcus was present in only one case, Friedländer's bacillus in one case, while pneumococcus co-existed with Pfeiffer's bacillus in 6 cases, and with *Staphylococcus albus* in one case in which they were the only pathogenic organisms isolated. Out of 4 cases which gave a negative result in culture films made from a post-nasal swab revealed the presence of an influenza-like bacillus in two.

Bacteriological examination of the lung tissue and exudate in the 24 cases mentioned above gave the following results. In these cases the medium used was Levinthal's, as described by Fildes, Baker, and Thompson.² From 15 cases a bacillus morphologically identical with Pfeiffer's bacillus was isolated. In 10 cases pneumococcus was present along with Pfeiffer's bacillus, while from 3 cases it was isolated in pure culture. *Staphylococcus albus* was present in 3 cases along with pneumococcus and Pfeiffer's bacillus, while a hæmolytic streptococcus was found in 2 cases, once in pure culture and once in conjunction with the influenza bacillus of Pfeiffer.

Prophylactic inoculation.—In view of these results a mixed vaccine was quickly prepared, containing *Bacillus influenzae*, pneumococcus, streptococcus, and staphylococcus, using strains isolated during the outbreak and following closely the recommendations of the War Office Committee.³ Nearly one thousand people have received this inoculation, and reactions appear as a rule to be mild or almost completely absent. It is as yet too early to judge of the efficacy of this procedure.

INFLUENZAL INTRA-ABDOMINAL CATASTROPHES.

By REGINALD ECCLES SMITH, M.B., F.R.C.S. EDIN.,
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DURING the recent epidemic of influenza which has passed along through the hospital in three successive waves from June to December, several important abdominal complications have been observed. They may be divided into three classes, comprising those directly due to a specific bacillus, those to associated toxæmia, and those which are coincident and noted as a warning to the surgeon.

Simulation of Severe Abdominal Lesion by Influenzal Lung Complications.

In the earlier days cases were being constantly sent in to the surgical section with the diagnosis of perforated gastric or duodenal ulcer, less frequently as an acute appendicitis, and this latter mainly on account of the youth of the patient rather than from minute clinical observation, and even as empyema of the gall-bladder. The onset has in almost all cases been sudden. The patient has come in with a history of malaise for a short period followed by acute generalised pain in the abdomen, associated with generalised rigidity, often vomiting, a temperature raised two or three points above normal, and a running pulse.

In a number of such cases there have been no clinical signs in the chest to lead to a definite diagnosis, and hints of diaphragmatic pleurisy have been hesitatingly offered. Careful observation has shown that the rigidity and the pain in these pseudo-abdominal lesions are not absolute, but in most cases are referred to the upper zone of the abdomen, and in a minority to the lower zone, including the right iliac fossa. The pain and rigidity in the upper zone are referred along the eighth, ninth, and tenth intercostal nerves and when traced are much more severe on that side of the abdomen which corresponds to the chest lesion either definitely present or appearing later. On two occasions I blocked the eighth and ninth intercostal nerves in a supposed upper abdominal catastrophe and the symptoms disappeared. Less frequently the eleventh and twelfth intercostal nerves have caused the referred pain and a perforated appendix has been very closely simulated, especially as no other physical signs could be found anywhere.

The true diagnosis is often difficult, especially as true abdominal complications can arise either directly or coincidentally, for which the physician and surgeon must always be on the alert. Apart from the knowledge that a devastating epidemic is abroad in which chest lesions are common and therefore kept in the surgeon's mind, three valuable points have been observed in the influenzal pseudo-abdominal catastrophe which differ from the true surgical abdominal lesion. These points may not, of course, hold good in a superimposed surgical lesion due to and grafted on to the original influenzal infection.

(a) The movement of the *alae nasi*. In cases of influenza with acute abdominal pain, even when no physical signs

¹ THE LANCET, 1918, II., 104.

² THE LANCET, 1918, II., 699.

³ THE LANCET, 1918, II., 585.

have appeared in the lungs and the respirations are only slightly increased, if the *alae nasi* are working the condition is never abdominal. In only occurs in late true abdominal lesions when general peritonitis is well advanced. The movement of the *alae nasi* may not be very marked when the patient is recumbent, but can be elicited with a little exertion.

(b) Dullness in the flanks is never present in influenzal pseudo-catastrophes except in Class A where it is an early sign.

(c) The facies of the influenzal victim¹ dominates the scene. The anxious, terror-stricken look of the true abdominal lesion is not present as a rule. The anxiety is more lethargic and resigned, and of the medical rather than the surgical type.

In some cases an unusually high temperature associated with acute abdominal pain should be regarded with suspicion by the surgeon.

Acute Abdominal Catastrophes.

The true types of acute abdominal catastrophes associated with influenza which have come under my notice may be divided into three classes.

Class A includes infections of the general peritoneal cavity by organisms associated with the influenza epidemic. The infecting agent has always been the streptococcus, and, as far as can be stated, it is a blood-borne or embolic lesion and takes the form of an acute streptococcal general peritonitis. The following is an illustrative case:—

Patient, aged 26, had been treated for typical influenza for a fortnight before admission. He had recovered from the acute stage and the temperature had not quite settled until Oct. 2nd. He was then seized with acute pain in the upper abdomen, with vomiting, and a temperature suddenly raised to 104° F., the pulse being 120. On admission on Oct. 2nd the pain was generalised throughout the abdomen, which was markedly rigid; marked dullness in both flanks. The evidence in the chest suggested a resolving consolidation at the right base. The *alae nasi* were working vigorously. On Oct. 3rd the picture remained as above, with the addition of beginning abdominal distension.

Operation: Para-median incision opposite the umbilicus. A quantity of sero-purulent fluid escaped. The whole of the viscera was acutely inflamed and the kidney pouches full of the fluid. No organic lesion of any viscus could be discovered. Free drainage established. The fluid revealed a pure culture of streptococcus. Death ensued on Oct. 4th.

Class B.—The following case is an example of acute toxæmic dilatation of the stomach.

Patient, aged 26, was admitted to the sick list on June 26th with a typical history, symptoms, and signs of influenza. Admitted to hospital on June 28th. It was then noted that he was of the types associated with marked toxæmia. On June 29th he complained of acute pain of a colicky nature in the abdomen; this was at once complicated by occasional vomiting of fair quantities of stomach content. On June 30th the vomiting became persistent, the quantities increased, and diarrhoea was added. The temperature dropped to subnormal; condition of profound toxæmia. The physical signs in the abdomen were exceedingly slight, and with the extreme poorness of the general condition did not justify surgical interference. At night the abdomen became distended generally and rigid, and dullness in the upper zone replaced the usual tympanicity. Diagnosis was made of acute intestinal obstruction, but no laparotomy was performed owing to rapid failure of the pulse, and he died the same night.

Post-mortem.—Lungs: Some patchiness and infiltration at the bases suggested a recovering broncho-pneumonia. Kidneys and liver: Cloudy swelling of an acute toxæmia. Stomach: Enormously enlarged and contained about 5 pints of non-offensive, stagnation stomach content, together with some altered blood. Numerous petechial hæmorrhages were seen in the mucous membrane. No organic obstruction was found.

In view of my later experience I think the following case would probably have gone on to the type of the later fatal cases had not care and discretion of diet been observed.

Patient, aged 25, U.S. Navy, was admitted on August 15th with a history of having been "off colour" for several days before going sick. On the morning of the 15th he was suddenly seized with acute pain in the upper abdomen, severe enough to require his being carried to bed. No vomiting occurred, and after the reaction following collapse the pain became generalised. He was sent to hospital after eight hours and was then admitted with a diagnosis of acute perforation of the stomach. On admission T. 101.5° F., P. 115, R. 24. On examination the first noticeable point was vigorous action of the *alae nasi*. The whole abdomen was rigid and fixed and apparently tender to palpation. No

physical signs could be found in the chest. The liver dullness was completely obliterated and there was dullness in the right flank. A slight history of prior gastric mischief made it advisable with the above signs to explore the abdomen. The movements of the *alae nasi* were marked, but insufficient to justify waiting for the possible development of signs in the chest.

Operation.—Abdomen opened in the usual manner. No gas or free fluid detected. The stomach rose from the abdomen like a balloon and the liver dullness at once reappeared. No organic lesion could be found. The stomach was massaged and emptied of its gas three or four times. Hot saline was applied and pituitrin injected into the arm. The abdomen was closed and patient returned to the ward. Pituitrin and atropine were continued and the feeds by mouth carefully restricted. After five days of typical influenzal chart and symptoms the patient recovered, no signs appearing on examination in the chest.

Surgeon Commander F. Bolton reported to me a case similar to the above, with recovery. Surgeon Lieutenant R. Carey had a death from influenza, with acute dilatation of the stomach, but I am unable to find the completed notes.

Class C.—In this class are placed coincident acute abdominal lesions occurring in the influenzal attack or during convalescence.

Patient, aged 16, was admitted on Sept. 15th, 1918, in a semi-conscious condition with the virulent form of influenza. The next day the condition was slightly improved and patient more alive to his surroundings. He had consolidation at the right base without any fluid in the pleura. The sputum contained streptococci and the influenza bacillus. On Sept. 18th he complained of acute pain in the lower abdomen especially located in the right iliac fossa. Operation was deferred by the surgeon consulted owing to the possibility of a pseudo-catastrophe arising from referred chest pain. On Sept. 19th the condition remained the same until 3 P.M., when he was seized with further acute pain in the abdomen. The rectal examination suggested a pelvic appendix, and the further pain a ruptured appendix with early general peritonitis. I advised immediate surgical interference in spite of the chest lesion and general condition.

Operation.—Battle's incision. A large gangrenous appendix which had perforated was found in the pelvis. Early general peritonitis was noted. Appendectomy was carried out and the pelvis and right kidney pouch were drained and abdomen closed. (*B. coli* found in culture; no streptococci noted.)

On Sept. 23rd the left lung became consolidated although the abdomen was satisfactory. On Sept. 25th the patient's condition was almost hopeless from general influenzal toxæmia and consolidation of both lungs. However, by Oct. 15th there was complete resolution of both lungs and patient made an uninterrupted recovery. He was discharged on Dec. 30th, 1918.

In one case a condition of long-standing tubercular peritonitis found, with much matting of the small bowel. A large encysted collection of pus was found between adjacent coils of the ileum. Death ensued. The case is of interest because of the possible lighting up of an old encysted collection by a recent organism.

Conclusions and Observations.

1. That during the present epidemic of influenza the chest should become more the province of the surgeon than is usual and should be minutely searched for any physical signs when a suspected abdominal lesion arises.

2. The three points I have already put forward will be found of great assistance in such cases, and may save a laparotomy in a patient who is already not in good condition.

3. The infection of the peritoneum is blood borne and is not due to direct extension through the diaphragmatic lymphatics. Streptococcal endocarditis is a jumping off ground for peritoneal infection, but is not necessarily always present.

4. Surgical interference so far has been of no avail, but it is not surprising when one studies the mortality in the present epidemic, in which as yet intra-abdominal lesions have not been recorded.

5. Discretion in dietary is very necessary in the toxæmic types, as an overloaded stomach may become a danger.

6. Persistent vomiting in cases of influenzal toxæmia should be regarded with suspicion. Although the evidence is as yet small, the condition of acute dilatation is proved, hence early stomach washing and the use of pituitrin may save a patient where a *laissez faire* attitude will certainly end in death.

7. The incidence of true abdominal catastrophes in a patient with influenza must always be kept in mind and suitable measures promptly undertaken.

¹ THE LANCET, 1918, I, 1.

Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON

THE USE OF INTRAVENOUS IODINE IN INFLUENZAL BRONCHO-PNEUMONIA.

BY D. M. BAILLIE, M.D. ABERD., D.P.H. LOND.,
CAPTAIN, R.A.M.C.; PATHOLOGIST, MILITARY HOSPITAL, WARLINGHAM.

THE idea of using tincture of iodine intravenously was suggested to me by Major S. M. Cox, R.A.M.C., Chinese Hospital, Mouille. While I was pathologist to No. 4 Stationary Hospital, France, I had been struck by the apparent futility of ordinary routine treatment for bad cases of influenzal pneumonia, and by the fact that many of these cases were septicæmic in type with comparatively limited involvement of the lungs, evidenced by extreme toxicity and cyanosis with comparatively few physical signs in the chest. This latter conclusion was confirmed by the cultivation in many cases of pneumococci from the blood stream. It seemed to me, therefore, that intravenous administration of iodine would be a rational method of treatment.

The B.P. tincture was used in doses of from 20-30 minims (22 m. = $\frac{1}{2}$ gr. of iodine). This was diluted with 9 c.cm. of a 0.85 per cent. solution of salt in freshly distilled water and given into a vein at the bend of the elbow in the same fashion as a neokharisvan injection. This was preferably given in the morning, repeated next day, and if necessary the day after.

Ten bad cases with definite signs of broncho-pneumonia were treated. Of these nine recovered and one died; the latter, in addition to pneumonia, had severe purulent bronchitis for a week before being treated. The drug was tolerated very well, and there were no untoward symptoms except that two patients had a rigor about an hour after the first injection (one of these gave a history of seven attacks of malaria), and another case developed a typical iodine rash. This man had a dose of π xx. on two successive days, and a final dose of π xx. after an interval of four days. The rash appeared on the day after the last dose, but rapidly cleared up in the course of a few days.

The therapeutic effect of the iodine was generally shown within 24 hours by a marked fall in the pulse-rate and temperature (the latter resembling a crisis) and a marked change for the better on the part of the patient. The temperature remained normal except, usually, for a slight rise on the evening of the first or second day after. The tongue cleaned rapidly, but the physical signs in the chest cleared up more slowly. The presence of albuminuria was no contra-indication as to the use of iodine; dense albuminuria in one case cleared up two days after the first dose.

It is highly improbable that the iodine given thus into the blood stream has any direct bactericidal action; the dilution is too high. It is feasible, however, to think that it may have an inhibitory effect on the reproduction of the organisms, at any rate in the blood stream. Taking the total quantity of blood in the circulation as 12 pints, a half-grain dose of iodine would represent a dilution of roughly 230,000. It may, perhaps, be feasible to suggest that the organisms in the act of cell-division would be vulnerable to a solution of that strength.

However, it is impossible and quite unjustifiable to draw conclusions from a series of so few cases, but circumstances at the time prevented me from going on with this line of work. I can say, however, that I was much impressed by the way in which these cases reacted to the iodine. The only excuse I have in publishing this is the hope that some members of the profession will take the method up and try it out fully.

I would like to take this opportunity of thanking Lieut.-Colonel E. T. Inkson, V.O., D.S.O., R.A.M.C., O.C. 4 Stationary Hospital, for his unfailing courtesy and kindness.

A CASE OF SPONTANEOUS RUPTURE OF AN OVARIAN CYST.

BY D. N. KALYANVALA, M.R.C.S. ENG.,
ASSISTANT MEDICAL SUPERINTENDENT, CHELSEA INFIRMARY, LONDON.

SPONTANEOUS rupture of an ovarian cyst is distinctly rare, but was evidently due in this case to the softening of the cyst wall, the actual exciting cause being in all probability an act of coughing. In view of the quantity of effused blood found at the operation the absence of any clinical sign of intra-abdominal hæmorrhage is interesting.

Mrs. A. B., aged 61, was admitted with the diagnosis of ovarian cyst for operation. There was a history of abdominal enlargement of four months' duration, with increasing dyspnoea. The lower abdomen was found occupied by a median swelling, obviously an ovarian or parovarian cyst; circumference round biggest diameter 47½ inches. As there was some bronchitis with slight pyrexia, operation was postponed for a week; the condition rapidly improved. No change in the signs or symptoms of the tumour was noted; no pain or faintness.

At the operation it was evident that the contour of the abdomen had changed, and on opening the abdominal cavity there was a gush of blood-stained cystic fluid containing large clots. After sponging this away a vertical tear 4 by ½ inches was found in anterior cyst wall. It was a unilocular cyst the size of a football, and firmly adherent to the omentum and numerous coils of intestine, and was fixed deeply in the pelvis by adhesion to the rectum. The cyst wall, soft and pulpy, was with difficulty separated from the adjoining structures. It was found to be growing from the left side by a short pedicle which had not undergone torsion. The whole cyst was removed, together with both Fallopian tubes to which it was adherent. The peritoneal cavity was swabbed dry; large drainage-tube inserted for 48 hours. Uninterrupted recovery followed and the patient was quite well when seen ten months later.

Sections of the cyst were examined by Dr. Knyvett Gordon, of the Virol Research Laboratories, who reported as follows: "The specimen is a good example of a cyst-adenoma pseudomucinosum. No evidence of malignancy was found."

It is probable that the rupture took place during the two days between my last inspection of the abdomen and the operation. Owing to the high intra-abdominal pressure the cyst was partially compressed against the abdominal wall and sudden evacuation of fluid prevented. As the contents were neither purulent nor gelatinous peritonitis did not develop.

A CASE OF NYSTAGMUS CAUSED BY MUSTARD GAS.

BY R. P. RATNAKAR, D.CH.O. LIVERP.,
RESIDENT SURGICAL OFFICER, MANCHESTER ROYAL EYE HOSPITAL.

AS I have not yet noticed in the medical press any case of nystagmus occurring as a result of mustard gas poisoning I think the following case worthy of record.

A man, aged 25, came to Dr. A. Hill Griffith as an out-patient in September, 1917. He had served in the Army since the beginning of the war as a signaller and was gassed on July 31st, 1917. He said that he could not see or open his eyes for two days, but after that he could gradually open his eyes and could see fairly well. About a fortnight after he was gassed his attention was drawn to the oscillations of his eyeballs, as the patient described the condition, by the medical man at the military hospital to which he was removed. Patient was a microphotographer at one of the largest hospitals in London before he joined up. His vision was excellent, and he had no nystagmus then; there is no reason to doubt his statement considering his work before and after joining the Army. On examination the condition was as follows:—Nature of nystagmus lateral. Pupils regular, active, medium. Movement of the eyeballs, conjunctiva, cornea, and media normal. The fundi were also normal. Nystagmus constantly present, but more marked on extreme outward and inward movements. Vision in both eyes 6/18 partly, not improved by glasses. Letters run into one another. Retinoscopy after a mydriatic: R. and L. +1 sph. Fields of vision and colour perception normal; no central scotoma. The patient came to the hospital for re-examination after three months as directed, and the condition was found to be practically the same.

Dr. Hill Griffith had previously seen two cases of nystagmus after mustard gas poisoning, but being sceptical

of the patient's statements that their eyes were normal before they were gassed he did not take any notes, and the patients never came for re-examination. But this third case was so definite that he asked me to take notes of the case. I am greatly indebted to Dr. Hill Griffith for permitting me to report this interesting case.

Medical Societies.

TUBERCULOSIS SOCIETY.

The Treatment of Tuberculous Glands.

A MEETING of this society was held at the Royal Society of Medicine on Feb. 24th, Dr. HALLIDAY SUTHERLAND, the President, being in the chair.

Dr. H. DE CARLE WOODCOCK, senior tuberculosis officer, Leeds, gave an address upon the treatment of tuberculous glands. He devoted his early remarks to some of the recent work by pathologists upon the different types of the tubercle bacillus, especially the types found in different lesions, in the several age-periods of life, and the possibility of the transmutation of the bovine into the human type. Bovine tuberculosis, so frequent in childhood, he said, is practically not found after the sixteenth year, the human type being responsible for the adult disease. He considered that as bovine disease tended to run a mild course and eventually to die out, it acted as a form of inoculation, protecting the individual against infection with the human type in later life.

In an examination of a large number of elementary school children in Leeds he found 25 per cent. with tuberculous glands, in Edinburgh 33 per cent. had been found, which he thought was probably accounted for by the higher incidence of bovine disease in that city. Of the children sent to the dispensaries as selected cases nearly all had tuberculous glands. The practice of removing all enlarged tonsils and adenoids he thought was not justified and should be limited to those cases where there is definite injury to the associated glands and the general health. He was strongly opposed to the surgical removal of tuberculous glands, in the first place, because with treatment most cases healed spontaneously, and, secondly, because of the danger of opening up fresh channels of infection and causing miliary disease. He advocated aspiration in cases with large masses of glands and injections of the following mixture:—

| | | |
|-------------------|-----|------|
| Oil of Peppermint | ... | mi. |
| Ether | ... | mv. |
| Spirit | ... | mvi. |

used undiluted in adults, and with an equal part of saline in children. This was useful in cases where softening had begun and was found most satisfactory. He had also practised multiple puncture with the galvano-cautery with favourable results.

In conclusion, Dr. Woodcock spoke highly of the value of tuberculin, which approached the position of a "specific," and was followed by a reduction in the size of the glands. Tuberculin was not to be used when chest disease was also present, as this tended to become worse.

At the next meeting of the Tuberculosis Society, on March 24th, 8.30 P.M., Sir William Osler will give an address on Acute Pneumonic Tuberculosis.

SOCIÉTÉ DE BIOLOGIE, PARIS.—The following is a summary of some of the papers read at the meetings of this society held on Feb. 22nd and March 1st.

Bossan et Guieysse-Pellissier.—Penetrating Power of Tracheal Injections.

Les auteurs ont fait des recherches sur la pénétration d'une substance médicamenteuse dans le poulmon sain ou tuberculeux par injection trachéale. Sur des lapins sains ou tuberculeux, une substance médicamenteuse dissoute dans de l'huile est injectée dans la trachée. L'huile est recherchée sur des coupes après action de l'acide osmique. Chez le lapin sain, l'huile se répand dans toute la hauteur du poulmon et peut être retrouvée dans les alvéoles six heures après. Chez le lapin tuberculeux, on la retrouve dans l'intérieur des nodules et des cavernes.

P. Brodin, G. Loiseau, et F. Saint Girons.—Relative Antitoxic Power of Plasma and Serum.

Des recherches effectuées par les auteurs sur le sang de 8 chevaux antitoxiques et 2 chevaux antidiptériques, il résulte que sérum et

plasma ont exactement le même pouvoir antitoxique. Des recherches parallèles faites à leur demande par M. Nicolle sur le sang de chevaux immunisés contre le pneumocoque ont montré que le sérum et plasma ont également le même pouvoir agglutinant.

E. Weill et G. Mouriquand.—Antiscorbutic Substances in Germinating Barley.

Les auteurs ont fait des recherches sur le moment d'apparition de la substance antiscorbutique et sur les accidents provoqués chez le cobaye par les grains d'orge aux différents stades de leur germination. Les auteurs montrent: (1) Que les grains d'orge germés 3 jours sont scorbutiques. (2) Que l'herbe d'orge germée 10 jours entraîne une mort brusque ou rapide. (3) Que l'association de graines germées 3 jours à l'herbe de graine germée 10 jours, permet une excellente nutrition du cobaye.

A. Benoit.—The Daily Ration of Nitrogen.

L'auteur a eu l'occasion d'observer quantitativement le régime strict d'un camp d'officiers russes prisonniers en Allemagne. Avec 1700 calories et 7 à 8 grammes d'azote par jour, la santé et l'activité se sont maintenues malgré un amaigrissement notable. La proportion d'acides aminés était conforme aux nécessités physiologiques connues.

Madsen.—Phagocytosis.

La vitesse de réaction de la phagocytose suit la loi des réactions bimoléculaires. Les relations entre la vitesse de réaction de la phagocytose et la température suivent les lois de Van't Hoff-Arrhénius. La phagocytose a un maximum, dépendant de la température de l'organisme qui a fourni les phagocytes.

SOCIÉTÉ DE THÉRAPEUTIQUE, PARIS.—At a meeting of this society held on Dec. 11th, 1918, Dr. J. Laumonnier reported a case of Typhoid Fever Treated by Colloidal Iron. 5 c.cm. were injected intravenously every three days, each c.cm. containing 1 mg. of pure iron. Six injections were given in all. The treatment appeared to have a moderating effect upon the fever and to prevent the occurrence of anaemia and leucopenia usually present in typhoid.—Dr. L. Renon and Dr. R. Mignot read a note on the Inefficacy of Injections of Saccharose in Human and Experimental Tuberculosis. A solution containing 5g. of saccharose and 2 cg. of novocain was injected subcutaneously or intramuscularly in cases of pulmonary or surgical tuberculosis without the slightest improvement being observed after 30 to 40 days' treatment. Saccharose was also injected into guinea-pigs previously infected with tuberculosis, but the course of the disease was not affected, and one of them even died before the controls.—In a paper on the Treatment of Influenza and Infectious Diseases in General by Lymphotherapy and Hematotherapy Dr. S. Artault de Vevey stated that lymphotherapy consisted in producing a bulla by any blistering agent and injecting 5 to 6 c.cm. into the patient's shoulder or buttock. As this process was not very rapid, and as sometimes the patient's skin was refractory to blistering agents, in cases where a blister did not form at the end of 10 hours the speaker had been in the habit of removing 10 to 15 c.cm. of blood and re-injecting it at once. To prevent clotting 2 to 3 c.cm. of a 10 per cent. solution of sodium citrate was first drawn into the syringe. This operation of hæmatotherapy was easy in the adult, whereas in the child lymphotherapy was the best method. Within a few hours of the injection of serum or blood the patient feels considerable relief; in the simple and abdominal forms the temperature becomes normal in 10 to 12 hours; and in patients with nervous complications or broncho-pneumonia in 36 to 48 hours.—Dr. A. Challamel read a note on Hypodermic Injections of Eucalyptus Oil in the Present Epidemic of Influenza. During the last few months he had been treating soldiers poisoned by mustard gas with hypodermic injections of eucalyptus oil (1 in 10) in doses of 2 c.cm. morning and evening. The treatment was started before any signs appeared in the lungs with the object of introducing an antiseptic into the finest ramifications of the bronchi. Eucalyptol was chosen owing to its proved value in the prophylaxis of contagious diseases. The success obtained in this class of case encouraged the speaker to adopt the same treatment in influenza with equally satisfactory results.

LITERARY INTELLIGENCE.—Messrs. P. Blakiston's Son and Co., of Philadelphia, announce a revised edition of Stitt's *Diagnostics and Treatment of Tropical Diseases*.

PRESENTATIONS TO MEDICAL MEN.—Mr. Scott Riddell, M.V.O., C.B.E., who has retired after 27 years' service for the Aberdeen Royal Infirmary, having been for 20 years full surgeon in charge of the wards, was on Feb. 12th presented on behalf of the medical staff with an illuminated address.—Mr. Lockhart Stephens, medical officer of health for Warlington and county director for Hampshire British Red Cross Society and Order of St. John, has received from his colleagues of the auxiliary hospitals in the county an illuminated address on the occasion of his retirement from the post of county director. Mr. Stephens was one of the early pioneers of the county association movement, with which he had been connected since 1909.

Reviews and Notices of Books.

The History of St. Bartholomew's Hospital. By NORMAN MOORE, M.D. Camb., F.R.C.P. Lond. London: C. Arthur Pearson, Ltd. 1918. In two volumes. Vol. I.: Pp. 614; Vol. II.: Pp. 886 and Index, 106. £3 3s. net.

A well-known passage of Virgil runs:—

Venisti tandem
Vicit iter durum pietas!

And we learn from Dr. Moore's preface that the work has taken some 30 years to bring to completion. The journey must, indeed, have been laborious, but every page is a witness to the tried and worthy reverence which the learned author feels towards the ancient and holy house of which he has been for many years so faithful a servant.

To write an accurate chronicle of the history of a corporate body which has existed for close upon 800 years is no easy task, but St. Bartholomew's Hospital has fortunately been able to preserve a very large number of its charters and other documents, either the original documents themselves or copies made in the year 1456 by John Cok, who became a Brother of the Hospital in 1421 and wrote a Rental or Cartulary of the Hospital. The last entry is dated 1468, so giving the record of the hospital down to the early years of Edward IV. Other original charters dealing with the business of the hospital are preserved in St. Paul's Cathedral, the Record Office, the British Museum, and Wells Cathedral. Dr. Moore has printed 234 charters in full, and given abstracts of over 270, in all cases with the names of the witnesses. Other sources of information are the Liber Fundacionis of the hospital, various notes by John Cok, and the Bishop's Register kept in Dean's-yard, St. Paul's. For later centuries the authorities are the Letters Patent of Henry VIII. for 1544 and 1547, together with the manuscript journals, ledgers, and Repertory Book, and the printed "Order" of the hospital. It may be seen from this recital that the information contained in the work has all been garnered from official and accurate sources so as to form an unimpeachable record of the hospital.

And how vivid a picture of the life of bygone times is here presented. In the first chapter we have an account of Smithfield "in the suburb of London" as it appeared in Fitz Stephen's time. He was the biographer of Thomas Becket, Archbishop of Canterbury, afterwards St. Thomas of Canterbury, and wrote an account of London as a prologue to the biography. Smithfield was then an open swampy place where cattle and horses were sold. Becket was murdered in 1170, so the hospital and priory had been founded some 50 years when Fitz Stephen wrote. At the time of the foundation Smithfield was anything but a desirable residential neighbourhood. It was marshy and wet, and the only habitation, if we may so call it, was the public gallows; the site, indeed, is a perpetual rebuke to that school of controversialists who maintain that the religious orders always sought out the pleasant places of the earth for their monasteries. Such persons think of Tintern and Beaulieu, forgetting the Grand Chartreuse and the Hospice of St. Bernard.

The story of the foundation of the hospital and priory is to be found in the Liber Fundacionis written by one of the Augustinian canons of the priory between 1174 and 1189, who gives an account of Rahere, of his early life, his conversion and journey to Rome, his illness and his vow to found a hospital, should God grant him recovery and return to his own country. He did recover, and on his way home had his vision of St. Bartholomew commanding him to found a church in Smithfield. On arriving in London he at once set about a twin work of piety; land was granted by the king, and the hospital and priory were commenced simultaneously in the year 1123, Rahere being the founder, Richard de Belmeis, Bishop of London, a warm supporter, and Henry I. giving the land. The hospital was built on the execution ground, being the highest part of Smithfield and having a gravel subsoil, the church and priory a little to the north of the hospital. The latter corporation owed certain duties to the priory, but had its own chapter and its own separate seal and administration. The original staff of the hospital was eight brethren and four sisters, observing the rule of St. Augustine. Rahere died in 1145 and within a year of his death Thomas, a canon of St. Oyth, was elected prior. Under his rule the number

of canons was increased from 13 to 35 and improvements were made in the hospital. He also obtained a charter from the Archbishop of Canterbury, giving confirmation of all rights and privileges granted by Henry I. Thomas the Prior died in 1174, at the age of nearly 100. Early in the reign of Richard I. Henry Fitz-Ailwin became Mayor of London and held office until his death in 1212. He was a generous benefactor of the hospital, as were many others of his contemporaries. Among the many charters of this period which survive there is one of particular interest: it is a *chirograph*, both parts of which are preserved, and sets forth that Stephen, the procurator of the hospital, granted to William, son of Simon of Rainham, certain land in the vill of Rainham, which he was to farm on condition of delivering to the hospital every year five quarters respectively of wheat, rye, barley, and beans; also eight quarters of oats and four cartloads of hay. Such was the rent; in return for it William and his heirs were confirmed in the use of the land, arable meadows, pastures, roads, paths, waters, gardens and brushwood, and all things without any reservation, including a house with two bedrooms, stalls for cattle and horses, a barn, a brew-house, an oven, and a fowl-house. The hospital gave William 10 marks of silver towards paying his debts and William gave 1 silver mark "*in gersumam*" for confirmation of the charter. The whole charter, the text of which is given in full at p. 240 of Vol. I., gives a most interesting picture of an Essex farm in the twelfth century, and shows that a religious house was not afraid to advance money to a good tenant.

It may be as well to explain the meaning of two terms mentioned above—namely, *chirograph* and *gersuma*. The former is the technical term for a charter or agreement, written in duplicate upon one piece of parchment. The two copies were written head to head or side by side and in the interspace was written in large letters the word "*chirographum*." The parchment was cut through this word longitudinally, and one party kept one half and the other the other, both parties thus having a complete copy of the charter and also a test of the authenticity of their copies. Sometimes the line of division was made wavy or indented; hence the term "*indenture*." "*Gersuma*" was a payment on the conclusion of a transaction paid by the beneficiary. It varied according to the magnitude of the transaction and the richness of the beneficiary. Thus in the time of Master Adam, 1147-1168, the hospital received an important addition of land and gave the donors three talents of gold "*in gersumam*," while in a charter written by William de Ripa, chaplain of the hospital in the reign of Henry III., Everard the outler was granted by Ralph of Frowic, the goldsmith, some land for which he paid seven shillings per annum, and Everard gave Ralph one pound of pepper "*in gersumam*."

As the years went by both hospital and priory continued in good works and were enriched by the offerings of the faithful until the great spoliation by Henry VIII. In 1536 priory and hospital were dissolved, and in 1537 the hospital property was given into the King's hands. So many were the sick turned loose into the streets owing to the dissolution of St. Bartholomew's and other hospitals that in 1538 the Mayor, aldermen, and commons of London presented a petition to the King that sundry hospitals and the buildings of other foundations might be handed over to them to be applied to religious and charitable uses. As regards St. Bartholomew's, this petition was granted in 1544, and in 1547 a new charter was granted drawing up a constitution for the hospital in all essentials the same as that existing to-day.

We have dwelt particularly upon the earlier parts of Dr. Moore's interesting work, but it is throughout permeated with the same scholarship and picturesque knowledge. The history of the hospital from the new foundation onwards is drawn from the ledgers, the repertory, and the journals of the house. A chapter is devoted to that famous son of Cambridge, Dr. Caius, who lived in the hospital from 1547 until his death in 1573, and another to Harvey, who was elected physician in 1609. Other chapters deal with the successors of Harvey, with the surgeons, beginning with those of the Old Guild, with the apothecaries and other members of the staff, with the nursing staff, the officials, the administrators, the school, the buildings, and, finally, with the patients.

So ends Dr. Moore's labour of love, a free gift by him to that body for which he has laboured faithfully for many

years; and the gift is in every way worthy of the recipient. Only a portion of Rahere's church still stands, and not one stone of the hospital as he built it exists. But the present buildings are on the identical site of 1123, and for nearly 800 years the hospital has been a place of which we may surely say, "sedentibus in regione mortis, lux orta est eis."

H. P. C.

Vaccines and Sera: Their Clinical Value in Military and Civilian Practice. By A. GEOFFREY SHERA, B.A., M.D., B.O. Camb., Clinical Pathologist to the British Red Cross Hospital, Netley. With an Introduction by Sir CLIFFORD ALLBUTT. Oxford War Primers. London: Henry Frowde and Hodder and Stoughton. 1918. Pp. 226. 7s. 6d.

Sir Clifford Allbutt, whose aim in writing an introductory note to Dr. Shera's book is to bring together the bacteriologist and the medical practitioner; has elsewhere described clinical pathology as the physician's handicraft. We find Dr. Shera an able and stimulating guide to one section, and that a very important one, of this handicraft. The day, he says, is passing when you either believe in specific therapy or you do not. We hope so, and the passing is likely to be accelerated by such a frank exposition as the author's. Specific therapy, he admits, is in parlous danger of being discredited owing to four deadly sins on the part of pathologists. These are: (1) undue optimism, due to a lack of perspective; (2) incoherence; (3) intolerance of the views of others; (4) commercial exploitation. We doubt ourselves whether the fault is "solely due" to the pathologists themselves, for what about the blind faith of the practitioner in a report which he does not always take the trouble to understand? Even now there are some who avail themselves of the help of clinical pathology who have never thought out the different importance of a positive and a negative result. The very object for which he asks the pathologist to search may be absent solely because the material has not been properly handled by the clinician.

After a pleasant autobiographical chapter on the present position of specific therapy the author goes on to discuss in turn vaccines—their preparation, administration, and use in various disease groups; sera, giving special attention to anaphylaxis and the special case of filter-passing viruses; specific therapy as applied to the special diseases of women and of children; and, finally, some miscellaneous topics, such as the use of normal and "auto." serum. Three useful sections, including résumé, glossary, and references, complete the volume.

Dr. Shera states his individual experience throughout, and in a subject which bristles with controversial points many will disagree with him, some in one direction, some in another. In the treatment of gunshot wounds he considers the case for therapeutic vaccines to be overwhelming, quoting a series of 25 consecutive cases in which autogenous vaccine was used, leaving the reader to draw his own conclusion. "Controls," he submits, are unnecessary, as "any military surgeon can form an opinion as to the average duration of treatment of his cases." He enunciates the "curious fact" that the presence of sequestra in a sinus can almost be diagnosed by the way in which the patient reacts to vaccines. The statistician irks him; no two cases, he says, are alike and percentages are therefore "out of place." Sometimes he may be frankly hoist with his own petard. Endotoxins, he says, demand vaccines, but in tuberculosis the typical endotoxic disease, he will have none of the only vaccine available—namely, tuberculin. Conviction, however, as the author reminds us, comes of experience, and Dr. Shera's only experience of tuberculin appears to be in the published writings of Dr. Batty Shaw.

We have said enough to indicate that this little war primer is a useful contribution to a vital subject and we hope enough to induce our readers to study it carefully.

An Enquiry into the Medical Curriculum by the Edinburgh Pathological Club has now been reprinted from the *Edinburgh Medical Journal*, the expenses of issuing it having been defrayed by a grant from the Carnegie Trust for the Universities of Scotland. As we have dealt at length with many of the valuable contributions to the Enquiry at the time of their appearance, we need not do more than call attention to their appearance in handsome book form, and to the summary of concrete proposals at the end of the

volume, which is now indexed. The reprint and the report on the curriculum separately may be obtained on application to Dr. H. M. Traquair, 16, Manor-place, Edinburgh.

JOURNALS.

Parasitology. Edited by G. H. F. NUTTALL, F.R.S., assisted by EDWARD HINDLE, Ph.D. Vol. XI. No. 1. November, 1918. Cambridge University Press. 12s. 6d. net. (Yearly subscription, £1 15s.)—*Spirocheta icterohemorrhagiae* in the Common Rat in England, with remarks on the minute structure of these leptospira (Noguchi), by Alfred C. Coles, comprises the results of an examination of rats in the neighbourhood of Bournemouth to see if spirochaetes could be found. The kidneys of 100 rats were examined and 9 of them contained a spirochaete morphologically identical with the *S. icterohemorrhagiae* of the guinea-pig.¹ The question naturally suggests itself: Does so-called "Weil's disease," or "infective jaundice" occur in England? In addition, one of the rats contained another species, which there is little doubt may be the spirochaete of rat-bite fever, *S. morsus muris*.—The Biology of *Amblyomma dissimile* Koch, by G. E. Bodkin, contains a description of methods of rearing this tick which occurs parasitic on the bull-frog in British Guiana. The life-history is described in detail, together with the longevity of the various stages. The total life-cycle takes roughly 153 days, assuming that each stage promptly finds a host. In addition, this species was found to be capable of reproducing parthenogenetically, and the author's results suggest that these parthenogenetic generations are entirely female.—*Lernaeopoda scyllicola*, n.sp., a Parasitic Copepod of *Scyllium Canicula*, by W. Harold Leigh Sharpe, is a description of a new species of parasite from the dog-fish, together with a detailed account of the male.—*Lernaeopoda globosa*, n.sp., a Parasitic Copepod of *Scyllium Canicula*, by W. Harold Leigh Sharpe, contains the description of another new species from the same host.—Trypanosomiasis of Camels in Russian Turkestan, by W. L. Yakimoff and others, is a lengthy account of camel trypanosomiasis from Bokhara, the Ural, and the Astrakhan regions. The trypanosome is described in detail and compared with the other pathogenic trypanosomes, from which it appears that it is very closely related to *T. evansi* of India. The writers then proceed to consider the various changes taking place in the blood of infected animals, and the article concludes with a short account of some therapeutical experiments, using mice infected with the virus from Bokhara camels.—Hibernation of Flies in a Lincolnshire House, by G. S. Graham-Smith, contains a record of the species of insects occurring in a house which had suffered from a plague of flies every autumn and winter for 24 years. The most numerous and troublesome fly was *Musca corvina*; *Limnophora septemnotata*, *Culex pipiens*, and a chalcid, *Stenomatus muscarum*, were also abundant.—Bilharziasis in Natal, by F. G. Cawston, is a description of the present state of our knowledge of this disease in Natal and the result of some personal observations extending over the last seven years. Bilharzia cercariae, similar to those which cause bilharziasis in Egypt, were found in specimens of *Physopsis africana*, a snail which abounds in infected localities. The experimental infection of animals was unsuccessful, in spite of numerous attempts to infect rats, guinea-pigs, rabbits, &c. The writer states that it is rare to come across a person whose life has been shortened, or whose death has been caused, by the disease in Natal.—The Cercariae of the Transvaal, by F. G. Cawston, contains a description of three new species of cercariae found in various snails. The latter, when living in flowing rivers, are considerably less infected with trematodes than those occurring in stagnant pools, and in addition, the presence of lime seems to have an adverse effect on the parasites.—The structure of the Mouthparts and Mechanism of Feeding in *Pediculus humanus*, by A. D. Peacock, contains a detailed account of the structure of the head of this important human parasite, primarily undertaken with the idea of finding out through which channel the organisms of disease may find passage on the way from the insect to man. The article is illustrated by numerous diagrams, and in addition contains an account of the manner of feeding.—*Clavella sciatherica*, n.sp., a Parasitic Copepod of *Gadus morhua*, by W. Harold Leigh Sharpe, contains the description of a new species of the family Lernaeopodidae, taken on a codling at Plymouth.

The *American Journal of Care for Cripples* becomes a monthly with its January issue, under the editorship of Dr. Douglas C. McMurtrie. Although dealing extensively with the rehabilitation of the invalided soldier, the journal is in no sense a war product, as it is now entering upon its eighth volume. It will contain in the future the studies, translations, and abstracts produced by the research department of the Red Cross Institute for Crippled and Disabled Men, which material has hitherto appeared in a special series of publications. The journal also continues as the official organ of the Federation of Associations for Cripples.

¹ THE LANCET, 1918, I., 468.

THE LANCET.

LONDON: SATURDAY, MARCH 15, 1919.

The Rapid Cure of Hysterical Disabilities.

ONE of the many peculiarities of hysteria is that the methods in vogue for its treatment are almost as diverse as its clinical manifestations. While the suggestionist extols his technique as the method *par excellence* for hysterical cures, the psycho-analyst regards suggestion as a positive hindrance in the way of therapeutic success. There is also the hypnotist, who claims 90 per cent. cures, or over, by his particular ceremonial, and the faradic-battery expert, who gets 100 per cent. cures; there is the advocate of simple persuasion and re-education combined with manipulation, who, similarly, is disappointed if complete recovery does not occur at a single séance, measured often only in minutes. Meanwhile, it may be supposed, the psycho-analyst, accustomed to delving in the unconscious for months, not to say years, wonders what sort of "cures" these may be, as the man in the street may wonder at the apparent uselessness of all methods alike, when he reads in his morning paper that the hysterically mute soldier suddenly recovers, after two years' resistance to all therapeutic endeavour, because someone stands on his favourite corn in a crowded tramcar.

It would be easy to quote chapter and verse for the conflicting statements of these exponents of rival procedures who thus push their wares in the medical market-place; but the dissimilarities are more apparent than real. The essence of cures by hypnotism, electricity, laying on of hands, and what not, is the influencing of the patient's mind by the mind of another, call it what we will. Even in regard to psycho-analysis it is by no means clear that suggestion can be put out of court as a therapeutic factor; for that matter there is something almost painful in the determined effort of FERENCZI and others to reduce suggestion to a sexual phenomenon and to delete the word from the therapeutic vocabulary. No doubt the trouble lies in the variety of meanings attached to the word "cure." The suggestionist holds that disappearance of symptoms constitutes a cure, in hysteria above all diseases, since somehow the fact of this disappearance reacts, or seems to react, on the patient's mind in a salutary way, so that much more is thereby effected than mere symptomatological improvement; the soldier who recently recovered his speech at a cinema and who was heard to utter a heart-felt "Thank God, I can speak!" has surely undergone a more radical change than is implied in return of innervation in an isolated neural mechanism. If we bear in mind the fact that the vast majority

of the war cases of hysteria are comparatively simple in type, relatively short in duration, not obscure in causation, and uncomplicated by elusiveness of unconscious motive, we can readily understand both the ease with which cases clear up in expert hands and the claim the operators make for permanence in results. We see no special reason to doubt the likelihood of the cures persisting, but the majority of those who have had much to do with civil cases in private and hospital practice will, we believe, be inclined to hold that not all cases can thus be summarily treated, or, at least, that the disappearance of a symptom or symptoms under the *force majeure* of persuasion does not necessarily entail a favourable modification of the underlying psychical basis of the affection. There are certain important varieties of the psychoneurosis to which treatment by persuasion, re-education, and manipulation does not appear to be specially applicable. Cases of hysterical fits, hysterical fugues, and alternating personality are among the more difficult and complex manifestations of the disease, and often call for the most persistent and painstaking treatment. To get at the underlying, the hidden, springs of the affection, to unmask the unconscious trends and motives perpetuating the clinical phenomena, to solve the apparently insoluble contradictions between the patient's overtly expressed desire to get better and his unconscious desire not to, is surely to reach a more permanent basis of cure. It is, perhaps, scarcely an exaggeration to say that hysterical cases, therapeutically considered, are either very easy or very difficult. When all is said, the chronic hysterical patient may resist every therapeutic endeavour, and, nursing infirmity to the end, defeat the physician by very feebleness.

One of the interesting questions aroused by a consideration of rapid cures in cases of some little duration is, How comes it that the nervous mechanisms are, as it were, ready to resume duty at a moment's notice—ready after, it may be, some years of disuse? The matter must not, of course, be taken too literally; experience shows there is commonly a period of awkwardness of use—e.g., in the case of hysterical paraplegia the patient usually requires an appreciable time to take up his bed and walk. But in other cases, say of aphonia, apparently no such interval of transition is necessary. In most cases there can be no doubt that unconscious or subconscious innervation keeps the mechanisms in working order; the hysterical paraplegic will draw up his legs in sleep. For other cases, possibly, no such explanation is quite feasible, though at least some hysterical aphonics and mutes are known to have muttered in their dreams. As permanently unconscious nerve mechanisms are kept in tone by proprioceptive stimuli, so may conscious mechanisms, deprived temporarily of the conscious element, be played on by automatic or involuntary processes arising from centres normally in abeyance. Be all this as it may, we must admit that in chronic cases active trophic changes may take place, from disuse mainly, handicapping full and

rapid restoration and necessitating physical as well as psychical treatment. Comparatively little attention has been directed to the actual physiological nature of the production of hysterical symptoms, although the late Dr. CHARLTON BASTIAN and the late Dr. T. D. SAVILL devoted much thought to this topic, and their conclusions are worthy of consideration. The disadvantage of psychological theories of hysteria is that the physiological anomalies are apt to be ignored owing to preoccupation with the psychical anomalies. In BABINSKI'S minute examination of the phenomena of so-called reflex paralysis we have a useful illustration and precedent for research, notwithstanding that, or because, reflex paralysis may really be a form of hysteria.

Scientific Education and its Cost.

THE minutes of the proceedings of the deputation of representatives of the universities of the United Kingdom received on Nov. 23rd, 1918, by the President of the Board of Education and the Chancellor of the Exchequer, Mr. H. A. L. FISHER and Mr. BONAR LAW, have been printed by the Universities Bureau of the British Empire, in order, no doubt, to preserve a fuller record of the speeches than is to be found in the newspapers. The names of those who were present to represent the universities, and other institutions doing work of university standard, show that the occasion of the deputation was not regarded lightly by any of the interested parties, and this was what might have been expected, seeing that the subject brought before the Chancellor of the Exchequer and the President of the Board of Education—namely, the financial needs of higher education—is one that at no time in our national history has deserved closer and more anxious attention.

We are living in a period full of opportunity for new progress and for development upon original lines in every direction, and we, as medical men, need not be ashamed to continue to remind ourselves of this obvious fact, so long as we see that there is a lack of unity and of promptitude in grasping the opportunity. It should not be necessary to point out that it is essential to recognise the facts and circumstances of the situation at the outset; if failure occurs in obtaining for medicine its just claims now, fresh reconstruction and reorganisation in the near future cannot be avoided; but time slips by and much yet wants discussion by the medical profession. In general and in brief the deputation, to use a popular expression, was "out for money." Its object was to secure State assistance in order to obtain in our country's interest the best brains and the best apparatus for instructional purposes, and in order to bring in among the learners the best of the young brains available. The coming Ministry of Health and the part which the medical profession must necessarily play in the carrying out of a health policy make the question of medical education of almost paramount importance. The fact that a well-educated and enlightened medical profession is a national need should not want to be emphasised at this juncture, but though medical men

may be tired of hearing it said, public repetition is necessary. We must go on affirming these things until there is no doubt that a Government responsible to the nation for the rebuilding of its forces in a far-reaching and enlightened manner is awake to what lies before it. The development of sciences growing in number and extent every year, each adding to the need for a larger and increasingly skilled staff of scientific workers, has to be provided for. Each new discovery adds to the expense of teaching medicine and makes it more dependent upon outside financial aid. Each year medical knowledge grows and becomes more expensive to impart, and medical education will lag behind unless adequately endowed.

But it is not to be expected that such aid as the State may afford to scientific education will fulfil all requirements, and wealthy and patriotic citizens who desire to see the future progress of their country assured among the nations of the world have now an unequalled opportunity for personal generosity. The facts in respect to medical education display the debt of the public under this heading, and they should be brought forward regularly and plainly. If the facts were understood we believe money would be forthcoming at once both from State and private sources. First, medical men pay a large sum for their professional education, which lasts at least six years, a sum which, as we have seen, will in the near future inevitably be larger; it is now about £1000. Secondly, this education is conducted partly by lecturers on special subjects, mainly ancillary to medicine, and partly by medical men in practice, who are members of the honorary staffs of the hospitals attached to the educational centres. The first class of teachers is very inadequately paid, the second class is at any rate to-day hardly paid at all, save indirectly, and though we admit that this indirect payment is in some cases quite large, in most it is nothing of the sort. Thirdly, medical men are not drawn from a wealthy class of the community; despite all the brave talk about the splendour of our profession, only those who desire to work hard care to start on the medical life. The promising list of entrances, however, among the students shows that the value of medical coöperation in the great war has caused medicine to appear as our most potent influence in the resistance to national disasters. Fourthly, medical education is regulated and controlled by an important statutory body, but the expenses of maintaining the Medical Register and standardising the examination tests are borne entirely by the medical profession. Yet the Medical Acts, under which the General Medical Council was called into being, were devised and are worked for the protection of the public and not for the aggrandisement of medicine. These are the things which we should like our readers to keep steadily before such public men and women as they come into contact with; they all converge to one point—that the public owes a debt to medical education. Those in charge of the Bill for the erection of the Ministry of Health ought to find the public ready to pay this debt.

Annotations.

"Ne quid nimis."

THE SLUM-DWELLER AND THE SLUM-OWNER.

A LECTURE delivered at Halifax by Dr. J. T. Neech, medical officer of health for that borough, has since been printed, and serves to ventilate some of the difficulties which are likely to delay the provision of suitable homes for the working classes in the United Kingdom. We are all agreed that a large number of workers are compelled to live in surroundings and in buildings which are in no sense suitable, except perhaps in point of price and of contiguity to their work. We also see, as the result of this, working men who can afford to do so living at a distance from the factories and places where they are employed, and travelling to them by trains, tramways, and omnibuses. This happens wherever the place of employment is in a large town, so that land is too much sought after for other purposes to leave it to any extent available for workmen's dwellings. Thus, streets and buildings, within the boundaries of a town where great industries are carried on, tend to become filled with workers who prefer to live near their place of employment, or whose employment makes it necessary for them to do so; by workers who cannot afford a cottage at a distance, with a journey as an additional expense; and by the large class of human beings in precarious employment, or in chronic unemployment, whom we find it difficult to picture as anything else than "slum-dwellers"—their main chance of casual jobs lies in being "on the spot." Dr. Neech advances the proposition that these "slum-dwellers" constitute one of the main difficulties of the situation, and that the hopeless and recalcitrant slum-dweller is a person who will remain as such and who cannot be compelled to be clean, industrious, and a decent member of society. He believes, however, that the slums and slum-dwellers of to-day are not what they were 50 or 25 years ago, that gradual improvement has taken place, and that up to a certain point it may be expected to continue. His suggestion here is that when the removal of the better class of its inhabitants from the slum has taken place, and the opportunity for reform and more wholesome conditions of living has been given, the children of those who prove to be beyond reform should be taken from them and be brought up in decent circumstances at the public expense. This he submits as a better investment from the national standpoint than the building of good houses for those not fit to live in them. To a certain extent he will win assent for his opinion as to the failure of surroundings and of opportunity to improve the worst cases now discoverable in the slums of our great cities. It is to be hoped, however—and indeed it may be believed—that surroundings and opportunity will effect something even with those who now appear to be hopelessly intemperate, thriftless, and indolent. As to the provision of houses, Dr. Neech is of the opinion that the industries employing the workers should bear as a legitimate charge the cost of building homes for them or a considerable proportion of it. Why, he asks, should the public at large provide houses for the working men gathered in a particular locality for the benefit of the manufacturers of motor-cars? Or why in

another place should persons who may disapprove of alcoholic beverages provide houses for those profitably employed by a large brewery? There is something attractive in a suggestion, which Dr. Neech follows up, that the existing building societies, in which the manufacturers might become large shareholders, should be the medium through which extensive building operations for industrial workers might be financed. One of the questions which future experience must decide is, whether, under the industrial conditions of the future, there is to be a large class of industrial workers who are unable to provide themselves with decent homes or to set aside a proportion of their incomes sufficient for the rent asked, even though such rent represents far less than the normal interest to-day upon capital more safely invested. So stated the difficulty appears merely financial, though other sociological factors are at play. But the decent housing of the industrial classes is one of the greatest requirements of modern medicine. To spare any effort to secure housing reform is to impede preventive medicine in a terrible proportion. The public debt incurred for carrying out adequate re-housing schemes would have to be crushingly heavy before it proved to be anything but a public asset, manifested by increased national vigour and productiveness.

THE TREATMENT OF AMÆBIC DYSENTERY.

THE treatment of amœbic dysentery by hypodermic injection of emetin, introduced by Sir Leonard Rogers, has been considered a great advance on the time-honoured treatment by ipecacuanha, as the serious drawbacks of the latter method, particularly vomiting, are avoided. In the *Journal of the American Medical Association*, Professor S. K. Simon, however, contends that the older treatment is, after all, the better in the more chronic and intractable infections. The prompt action of emetin is striking and its amœbicidal effect on free organisms is undoubted, but in the destruction of encysted amœbæ it fails, opening the way for relapses. Unless large doses of ipecacuanha or emetin are given the amœbæ seek protection by encysting themselves. In considering the dosage necessary for completely overwhelming them the toxicity of the drug must be taken into account. Crude ipecacuanha in amounts as high as 75 gr. daily for ten days has been found singularly devoid of toxic effects, but not so the alkaloids in equivalent dosage. In 1916 two American investigators, Pellini and Wallace, showed that emetin depresses and may eventually paralyse the heart, that it is a powerful gastro-intestinal irritant, whether given orally or subcutaneously. Because of the failure of emetin to destroy encysted amœbæ and its toxic properties attempts have been made to devise higher chemical formulæ of the alkaloid, such as emetin bismuthous iodide, and these have been extolled by British writers in the more intractable forms of dysentery and in the freeing of carriers from infection, but these claims have not been endorsed in America. In the treatment of dysentery in the Southern States Professor Simon therefore reverted to the old treatment. He used salol-coated ipecacuanha pills with gratifying results both in treating the active disease and preventing relapses. But he insists on careful attention to detail, and to want of this ascribes the prejudice against the crude drug. The patient

must be put to bed for the whole course, usually extending over ten days, and restricted at first to foods which leave no residue, such as broths, whey, and albumin water. Milk is to be added only after the fifth or sixth day. A dose of castor oil should be given on the morning of the first day and in the evening 10 to 15 pills, each containing 5 gr. of ipecacuanha. They are to be swallowed slowly with a little water. No nourishment is to be allowed for two hours preceding and for six hours following administration of the pills. Each succeeding night the same plan is repeated. It may be necessary, especially if there is any depressing effect, to discontinue the pills for one night. The nurse records the number of pills which may be passed undissolved in the stool, so as to determine the total amount of ipecacuanha retained. The complete dosage includes the retention of 100 pills (500 gr. of ipecacuanha). This is usually accomplished in 10 days and only rarely requires two weeks. If vomiting is troublesome an extra coating of salol should be given to the pills. For reasons not clear a large number of pills may be passed undissolved, even with a diminished coating. One or two punctures may then be made in the pills. When under rare conditions the ipecacuanha is not tolerated in pill form, daily instillations of 30 gr. of ipecacuanha, suspended in water, may be given by duodenal intubation, using Gross's method of introducing the tube. The problem of effective treatment hinges on concentration of the active constituents of the drug at the site of infection in the large bowel. When emetin is administered hypodermically or by mouth it is enormously diluted before it is brought by the blood stream into actual contact with the affected intestinal wall.

THE HEALTH OF LILLE DURING GERMAN OCCUPATION.

Professor A. Calmette, who has now left the Pasteur Institute at Lille to direct the parent institute in Paris, has recently laid before the Academy of Medicine his first-hand impressions of the effect of the German occupation of Lille upon the health of its inhabitants. He remained at his post during the whole of this period. Before the war the population of the city was 220,000, but at the time of its liberation by the Allies the number had decreased to precisely one-half. In 1914, when the Germans were advancing through Belgium on Northern France, about 60,000 persons fled from Lille in panic to seek safety in other parts of France or in adjoining neutral countries. When the Germans arrived they deported about 25,000 young women and youths to Germany to work there in factories and workshops; others were compelled to do forced labour in the trenches or work in some other way in the war zone under conditions of great danger to life and health. Those who remained were naturally the elderly and weakly, as well as a large proportion of children. The annual death-rate from all causes in the city before the war averaged 19.1 per 1000, but it rose gradually in the altered population from 27.7 in 1915 to 41.5 in 1918. Among the chief causes of death were tuberculosis, diseases of the heart, epidemic dysentery, and scurvy, as also those other diseases which are provoked or aggravated by insufficient nourishment. The death-rate from tuberculosis had been, before the German occupation, 3.3 per 1000, but from 1916 to 1918 it rose to 5.7. Professor Calmette states on high authority that examination

of the children and young people after the liberation of Lille showed their development to have been arrested and about 20,000 young subjects to have become "degenerates" as a result of insufficient or bad food, the high prices of which during the German occupation were, to quote M. Calmette, "fantastic." As might have been expected in the circumstances, births rapidly declined, although not quite to vanishing point, falling from a total of 4885 in the year 1913, to 602 in 1917, and 609 in 1918. Infant mortality diminished considerably at the same time owing, M. Calmette suggests, to the lack of cow's milk in the city and the consequent disappearance of infantile gastro-enteritis. Mothers suckled their own infants or fed them on the condensed milk provided by the American Committee. These are only some of the points of interest contained in M. Calmette's study.

SELECTIVE TISSUE DESTRUCTION.

THE paper on Picric-Brass Preparations in the Treatment of Lupus contributed to our present issue by Dr. H. A. Ellis covers a good deal of unexplored territory. The selective destruction of tissue is an aspect of the antiseptics question which has attracted the attention of bacteriologists and clinicians alike since the early days of the antiseptics controversy. It has long been recognised that the various tissues of the body have widely differing powers of resistance, and that this difference has a very practical bearing on matters so diverse as the laboratory standardisation of antiseptics on the one hand and phagocytosis on the other. The work of Ehrlich and his colleagues on the salvarsan compounds gave unmistakable indications of differences existing between the selective destruction of tissue in diseases due to protozoa, such as syphilis, and diseases due to the pyogenic organisms. Again, the recent work of Lorrain Smith, Dakin, Browning, and others on the newer antiseptics has shown that free hydrogen ion concentration, electrolytic dissociation, and numerous other physico-chemical phenomena enter very largely into the question. In applying similar principles to tuberculosis difficulties arise, the chief of which is that the histological tubercle is an avascular growth. We await further details of Dr. Ellis's work with interest.

PLANT STIMULATION BY ULTRA-VIOLET RAYS.

SOME remarkable experiments have recently been made in regard to the influence of ultra-violet rays on the development of the sugar cane, the pineapple, and the banana, which seem to show that if it were not that the atmosphere largely absorbed these rays from sunlight the world's production of vegetable foodstuffs would be very materially increased. For example, three lots of sugar cane were planted, the first being covered with coloured glass to exclude 50 per cent. of the sun's ultra-violet rays, the second being exposed normally to sunlight, and the third to the combined action of sunlight and of the ultra-violet rays from a mercury vapour lamp. Beyond this distinction other things were equal, as, for example, supplying the plant with the same kind and amount of fertiliser. After several months the second lot was found to contain as much as 30 per cent. more sugar than the first, and the third lot contained 8 per cent. more sugar than the second. It is suggested that, according to this experiment, the time taken normally for the development of

the cane to maturity, which is as a rule 20 months, would be very considerably reduced if only an economic and practical source of ultra-violet rays could be found. The use of mercury lamps on any scale is, of course, impracticable, but there is a possibility of producing the rays perhaps by less expensive means. Pineapples submitted to the rays for 40 minutes each morning developed a fruit riper, juicier, and larger than that exposed to sunlight only. It was further noticed that banana leaves and stalks which had been cut and placed in water kept their original freshness even after two weeks when they had been exposed to ultra-violet rays, whereas the same materials untreated faded completely after six or seven days. This treatment when carefully carried out therefore delays the deterioration of the fruit, and so would help its export to a remote destination in sound condition. The ultra-violet rays, of course, are well known for their germicidal properties and have been used as a means of sterilising drinking water even on a large scale, as at several towns in France. It would be interesting if some relationship were proved to exist between this sterilising action of the rays and their stimulating effect on plant development.

THE WORK OF THE AMERICAN MEDICAL CORPS.

In the United States of America some millions of men were recruited within the space of a few months. Between March and December, 1917, the number of enlistments increased 8-fold, and in September of that year alone 462,000 were mobilised. Camps were set apart for them, and after a period of training they were sent to England or France. A large majority of the recruits came straight from city life and were in soft condition. At the outbreak of war the Medical Corps of the United States Army was totally inadequate to deal with anything but a small expeditionary force. Volunteers from among civilian medical men were available, but they needed training in army methods before they could become serviceable. The problem was, in fact, a difficult one to solve. But the medical profession of the United States rose to the occasion, and a sufficient number voluntarily offered their services to put the newly-raised army under effective medical and surgical care—a result largely due to the energy and initiative of Colonel Franklin Martin, of Chicago. The response of highly skilled surgeons and physicians to their country's call was prompt and general, and it was their assistance as organisers, and especially the example set by them to their fellow practitioners, that melted away difficulties. When all the circumstances of the campaign are taken in review there remains no doubt that the exceptionally good health of the new American Army on both sides of the Atlantic has been a testimony to the success of medical mobilisation. With the exception of influenza, no widespread epidemic has prevailed. Lobar pneumonia and cerebro-spinal fever were prevalent for a time in certain camps, but never attained large proportions. As in the Allied armies, the enteric fevers formed an almost negligible factor in producing military inefficiency, and diseases the spread of which is mainly due to defective hygiene and sanitation were conspicuous by their absence.

These facts are confirmed in a report recently issued by the U.S. Secretary for War dealing with the health of the American troops up to the end of August last. For the year preceding that date the

death-rate from disease among troops in the United States was 6·4 per 1000; in the Expeditionary Force it was 4·7; in the combined forces it was 5·9. The male civilian death-rate at the same period for the age-groups most nearly corresponding to the Army age was substantially the same as the rate for the Expeditionary Force. What the low figure means in lives saved is shown by a comparison with the rate of 65 per 1000 in the Union Army during the Civil War, and one of 26 per 1000 in the whole American Army during the Spanish War. With the changing personnel of the Army the incidence of disease changed too. In 1916 tuberculosis accounted for 14 per cent. of deaths, pneumonia for 11, and cerebro-spinal fever for 4. In 1917 the figures were 4, 25, and 10 respectively. Pneumonia, either primary, or secondary to measles, was in fact responsible for 56 per cent. of all the deaths among the troops in the year under consideration. In the subsequent period the sky was clouded by the influenza epidemic. During the eight weeks from Sept. 14th to Nov. 9th 316,000 cases of influenza were reported amongst troops in the United States, and over 53,000 cases of pneumonia. Of the 20,500 deaths notified during this period probably all but about 700 were the result of influenza. In another direction the good health of the Army was in no small measure due to the vigorous anti-venereal campaign waged by the U.S. War Department. The measures put into force included the repression of prostitution and of the liquor traffic in zones near cantonments, provision for a sensible social environment and proper recreation, education of soldiers and civilians with regard to the risks of venereal disease, the provision of prophylactic remedies, and prompt medical treatment in case of infection. During the year under review the number of venereal admissions to sick report was 126 per 1000 men, the figure including duplicate entries. It is stated that in a majority of cases the disease was contracted before entering the Army. Among the troops in France, where there were no recruits fresh from civil life, the record was better than at home, and the incidence of venereal disease fell rapidly and continuously. All these facts are set out at length in the report of the Surgeon-General, U.S. Army, for the fiscal year ended June 30th, 1918, although the record does not contain the recent figures given above.

Something of the total achievement may be gleaned from the statistical part of the report. In the States the Army had at disposal 80 fully equipped hospitals, with a capacity of 120,000 beds. At the time of the armistice there were 104 base hospitals and 31 evacuation hospitals belonging to the Expeditionary Force, in addition to an evacuation hospital in Siberia. Army hospitals in the States dealt with nearly a million and a half patients during the war; those with the Expedition had approximately half this number under their care. It will be remembered that, over and above furnishing the medical personnel for the units detailed, the War Department, through its chief surgeon, released 931 American medical officers to serve with the British forces at the most critical period of the campaign, and a further 169 officers for service in base hospitals turned over to British troops. The total number of the civilian medical profession in America is, however, so large that, taken all in all, up to the end of July only about 15 per cent. were counted as having gone on active service. The

reservoir on which to draw was much greater than ours, and although, as we have seen, the satisfactory health of the American Army during the war was due to the devotion and self-sacrifice of a goodly proportion of the civilian medical profession, this was done without dangerously depleting the number of those on whom still rested the responsibility for health and hygiene at home.

THE PSYCHOPATHIC CRIMINAL.

WE are glad to learn that the justices of the city of Birmingham have taken further steps to give effect to the scheme for the psychiatric examination and differential treatment of psychopathic offenders, to which reference was made in THE LANCET of Jan. 25th. The justices have obtained from the Prison Commission the promise of the appointment to Birmingham Prison of a whole-time medical officer with special expert knowledge of mental diseases; and they have also secured the services of Dr. W. A. Potts to act as court doctor to advise in cases not coming under the examination of the prison medical officer, as, for instance, cases where accused persons are remanded on bail or charged on summons. It is proposed that in all prosecutions when there is reason to suspect that the alleged offender is mentally abnormal the court shall postpone action until full inquiry on this point has been made by either the prison medical officer or the court doctor, or by both these experts in consultation. On the further hearing of the case, if the justices decide to convict, this expert evidence will be brought out in court and will be taken into account in settling the mode of treatment which will best serve the interests of the individual offender and of the community. The justices anticipate that, even in the existing state of the law, they will be able to give effect in a considerable measure to the principle of individualised treatment by using their very wide powers under the Probation of Offenders Act. Thus, it will be possible to include in the conditions of probation that the person placed under probation shall report himself periodically to the court doctor, shall observe such instructions regarding his mode of life, and shall accept such medical advice and treatment as the court doctor may give him. The Birmingham justices are setting an excellent example to the country, and the results of their experiment cannot fail to be extremely valuable in view of the growing recognition of the need to ensure the more efficient treatment of mental invalids by the organisation of psychopathic clinics.

TUBERCULOSIS IN FEMALE MUNITION WORKERS.

TOWARDS the end of 1917 it became evident that the mortality from tuberculosis among women was on the increase. This increase was small, but appreciable; and it was the more significant in the light of the fact that before the war the mortality from tuberculosis had been steadily decreasing. In his analysis of the vital statistics of England and Wales for 1916, Dr. T. H. C. Stevenson has noted that the increased mortality from tuberculosis did not affect women over 45. Hence his suggestion that the cause of the increased mortality is to be sought in the war-time industrial employment of women on an unprecedented scale. To test the validity of this suggestion, an inquiry was instituted, under the auspices of the Medical Research Committee, as to the prevalence and ætiology of tuberculosis among

industrial workers, with special reference to female munition workers. The report¹ on this inquiry by Captain M. Greenwood and Dr. A. E. Tebb tends to confirm Dr. Stevenson's views, but, as they point out, it is impossible to put the accuracy of these views to any absolutely rigid test. The report deals with the available evidence in the following sections: (1) Occupational Tuberculosis, as revealed by the statistics of male operatives, the Registrar-General's decennial supplements including the unpublished data for 1910-12; (2) Occupational Morbidity and Mortality of Women; (3) Regional Distribution of Mortality in England and Wales during 1911; (4) War-time Statistics of England and Wales; (5) Factory Conditions in Birmingham in 1917. Investigations in Birmingham showed a relatively great incidence of phthisis among employees in unhygienic factories and serious overcrowding in industrial dwellings. But no evidence was found of any specific trade habit amongst munition workers specially apt to favour conveyance of phthisis from one person to another.

FACTORY SURGEONS AND THE MINISTRY OF HEALTH.

THE Association of Certifying Factory Surgeons has circularised the members of the Standing Committee appointed to consider the Ministry of Health Bill regretting that the Bill, as it stands at present, does not include a well-defined policy of improved medical supervision for factories and workshops. While the Bill certainly enables the Ministry to take over factory inspection, the decision would apparently depend on agreement between the different Government Departments concerned. The Association recommends that the powers and duties of the Secretary of State with respect to control of sanitation in factories and workshops, the appointment of medical men as inspectors of factories, and the appointment and duties of certifying surgeons, should be among the powers which can be transferred to the Ministry of Health by Order in Council. The Association also desires the appointment of a Board of Health on the lines laid down in the original Bill, to advise the Government on all legislative and administrative points concerning public health.

IN view of the approaching retirement of John A. Turner, C.I.E., M.D., D.P.H., executive health officer to the municipality of Bombay, the corporation has placed on record their recognition of his long and arduous services extending over a period of 18 years, especially in connexion with the Bombay Sanitary Association, the King George V. Anti-Tuberculosis League, the Lady Willingdon Scheme Maternity Homes, and the Anti-Venereal League. All these useful institutions owe their establishment largely to Dr. Turner's efforts.

¹ An Inquiry into the Prevalence and Ætiology of Tuberculosis among Industrial Workers, with special reference to Female Munition Workers. H.M. Stationery Office. 1919. 1s. 6d. net.

SIR CHARLES BURTCHAELL HONOURED.—The honorary degree of LL.D. Dublin was recently conferred upon Sir Charles H. Burtchaell, D.G. A.M.S. in France, when the orator described him as: *Medicum inter medicos, bellatorem inter bellatores eminentem*. On March 3rd he was admitted to the honorary fellowship of the Royal College of Surgeons in Ireland, and on March 7th received a like honour from the Royal College of Physicians of Ireland. Addressing a medical audience on the latter date on Disease and Success in War, General Burtchaell paid a tribute to the work of the "Dublin Hospital" at Boulogne.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Scottish Ministry of Health Committee.

WHEN the Ministry of Health Bill was first introduced a temporary council or committee was formed in Scotland drawn from recognised official medical bodies, with the view of collecting and formulating the opinions of Scottish doctors on the establishment of the Ministry and the problems of medical reconstruction. At a conference, held on Jan. 4th, representatives were present of the Scottish Branch, General Medical Council, the Scottish Universities, the Scottish Royal Medical Corporations, the Scottish Committee, B.M.A., and the Association of Medical Officers of Health, when it was agreed to form a committee—to be known as the Scottish Ministry of Health Committee—for the above purpose. It was decided that the committee should consist of 44 members, made up as follows:—

| | |
|--|----|
| Scottish Members of the Scottish Committee of the British Medical Association | 18 |
| Members of the Scottish Branch of the General Medical Council | 9 |
| One representative from each of the Medical Faculties of the Scottish Universities | 4 |
| Two representatives from each of the other Licensing Bodies in Scotland | 6 |
| Two representatives from the Association of Medical Officers of Health | 2 |
| One representative from the Scottish Association of Medical Women | 1 |
| Four members to be co-opted later | 4 |

At the first meeting office-bearers were appointed as follows:—Chairman: Sir Donald MacAlister. Vice-chairmen: The Presidents of the Royal Medical Corporations; The Direct Representative for Scotland on the General Medical Council; the chairman of the Scottish Committee; and Dr. Goff, Bothwell. Secretary: Dr. Fredk. K. Smith, Aberdeen. It was agreed that the office-bearers should form a business subcommittee to prepare business for the full committee.

The committee has met twice to consider the Ministry of Health Bills as published in November, 1918, and February, 1919. Each clause in the Bills was discussed and various suggested amendments were considered. Ultimately it was resolved to communicate the following to the authorities concerned:—

1. That provision ought to be made by direct enactment in the Ministry of Health Bill for the transfer to the Minister of Health of the Administration of the Anatomy Acts, and to the Scottish Board of Health of the Administrative Work of the Highlands and Islands Medical Service Board.

2. That with regard to the constitution of the Scottish Board of Health, the proposed minimum of medical representation—namely, one member—is totally inadequate, and that not less than one-third of the members of the Board ought to be registered medical practitioners; and also that the special provision that a medical member of the board should be the holder of a "diploma in sanitary science, public health, or State medicine under Section 21 of the Medical Act, 1886," is unnecessary and should be omitted.

Chair of Therapeutics, Edinburgh University.

The necessary preliminaries having been concluded, it is understood that the Edinburgh University Court will shortly proceed to the appointment of a professor of therapeutics. An entirely new scheme for the teaching of materia medica will thus be completed, the appointment of Professor A. R. Cushny to the Chair of Pharmacology having recently been made. The new professor will, in addition to his systemic lectures, teach clinical medicine in the wards of the Royal Infirmary recently under the charge of Sir Thomas Fraser, emeritus professor of materia medica. He will be debarred from private practice.

Influenza Epidemic in Edinburgh and District.

There is every indication that the epidemic is rapidly abating; new cases are not so frequent, admissions to hospitals are much less numerous, and the cases which are occurring seem to be definitely less acute in most instances. Active investigation of the disease is being carried on in the laboratory of the Royal College of Physicians, but results have not yet been reported.

March 10th.

THE Dorset County Council has increased the salary of Dr. W. T. G. Robinson, their medical officer of health, by £100 to £600 per annum.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Professor Chantemesse.

André Chantemesse succumbed on Feb. 26th to a sudden attack of angina pectoris coming on during influenza, at the age of 67 years. He was born at Puy on Oct. 13th, 1851, and, soon coming under the influence of Cornil and Paturel, decided to devote his life to pathological anatomy and bacteriology. He became in succession physician to the hospitals, professor of hygiene in the Faculty of Medicine, and Inspector-General of Sanitation at the Ministry of the Interior. His best-known works dealt with mosquitoes in relation to yellow fever, flies in relation to cholera, prophylaxis on frontiers, while he was looked upon as an authority on the enteric fevers. It was Chantemesse, in fact, who instituted the first researches on antityphoid inoculation. By means of heated cultures he produced a vaccine which gave good results in animals but produced no decisive effect on man. Hence his discovery led no further until Wright used a lower temperature for sterilisation and Vincent suggested ether for the same purpose, when he modified his procedure with resulting success. Professor Chantemesse was a member of the Academy of Medicine and a Commandant of the Legion of Honour.

Phthisis among Coloured Troops in France.

M. L. Moreau has noted during the war the frequent occurrence of tuberculosis amongst the men of the yellow and black race in the French Army. The disease is apt to escape discovery, as the general health of the men often remains good for long. Strange climatic conditions, physical overstrain in subjects wont to live a life of indolence, and changes in their usual alimentary régime, are among the causes adduced to explain the rapid development of tuberculosis. When the disease is clinically latent the X ray screen at once gives the clue. In many coloured labour battalions influenza has aided the development of the disease, and has frequently been the cause of a fatal issue. M. Moreau suggests that these men should be submitted to careful radioscopic examination before being employed in Europe.

The Late Results of Gassing.

Professor Achard directs a special gas service at the Hôpital Necker, in Paris, receiving there the patients sent down from casualty clearing stations as convalescent, although many of them were found to be still insufficiently recovered at the end of their leave. He has followed the subsequent history of 3525 patients, of whom 2958 had been submitted to blistering gas and 567 to suffocating gas, the proportion being 85 per cent. of the former to 15 per cent. of the latter, blistering gas having been employed by the Germans on a larger scale than the other. The frequency of late accidents was, however, much greater in the case of suffocating gas, which leaves the graver and more lasting results. Chief of these is the diminution in respiratory exchange. Normally the amount of CO₂ exhaled hourly per kilo of body-weight is 0.55 g. After gassing this figure continues to drop considerably for a prolonged period, demonstrable by placing the patient in a closed chamber in which the quantity of carbonic acid gas produced is measured. The figure mentioned may drop to 0.34 g. in a man who has been submitted to suffocating gas, and this low value may persist, it may be, for as much as two years. After blistering gas the results are less grave and lasting; the diminution of the figure mentioned rarely lasts more than seven to eight months, nor does it fall below 0.40 g. The reduction in CO₂ output is not regular; it is considerable at the outset owing to pulmonary oedema. The output gradually rises for two weeks or so, during which the bronchi become patent and falls anew for a very extended period, in which the lung lesion is undergoing sclerosis. Another subject studied by M. Achard, both clinically and experimentally, is the relation between tuberculosis and gassing. He concludes that tuberculosis does not develop more frequently in gas victims than in other subjects, but that when latent lesions exist they are apt to undergo rapid development. A number of gassed patients, owing to persistent cough, wasting, apical râles, and even hæmoptysis, give the impression of being tuberculous, but their sputum

is found on examination to be free from albumin, and X ray examination of the lungs shows them to be entirely clear, while the apices light up as they should during cough. March 8th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Indian Science Congress.

THE Indian Science Congress was held recently at Bombay. Sir George Lloyd, the Governor, having opened the Congress, the presidential address was delivered by Sir Leonard Rogers, who gave an account of his work in the field of cholera research. He showed how this work, which had been carried out in circumstances often of great discouragement, had resulted in reducing cholera from a disease from which there was little or no hope of recovery to one in which, granted speedy treatment, there was not much more danger than from many other diseases productive of death.

The Supply of Sub-Assistant Surgeons.

In an address recently delivered in Calcutta at the opening of a sanitary and indigenous drugs exhibition, the Governor of Bengal, Lord Ronaldshay, referred to the need for an adequate supply of sub-assistant surgeons to effect any lasting improvement in the public health of Bengal. He hoped that some of his hearers would look to sanitation as a career. There had hitherto been little inclination among medical men to do this because the openings for highly qualified men had been so few, but as part of the campaign against disease it was his intention to ask each local board to employ a fully qualified health officer. Lord Ronaldshay also referred to the demand for sub-assistant surgeons in Mesopotamia, where the Government was prepared to offer generous terms to volunteers.

The Next War: Man versus Insects.

Lieutenant-Colonel W. Glen Lister read a paper with the above arresting heading at the Indian Science Congress last month. The lecturer emphasised the need of educating the people in the dangers which multiplication of insects connotes, and appealed for greater coöperation among medical men in all their work, and particularly in the work of research and in preventive measures. As an example he cited the fact that in India more than ten million lives have been sacrificed to plague, which is preventable, and only requires the coöperation of medical men, the enlightenment of the people, and the spending of money to make it disappear.

Plague.

The Sanitary Commissioner with the Government of India, in his notes on the plague from returns made in December, stated that the incidence of plague mortality remains uniformly low throughout the country. The mean incidence of plague mortality for the month of December during the last 20 years has been 35,808.

Organisation of Chemical Work in India.

The Commission which has just concluded its labours recommends the appointment of a Chief Chemist to the Government of India, with three Deputy Chief Chemists controlling the following groups of chemical works:—(a) Agricultural; (b) organic; and (c) minerals. Under the Chief Chemist would be a headquarters laboratory engaged on all forms of chemical research.

Cholera.

The latest reports from India state that the mortality from cholera in Bombay is increasing, in one day the returns showing 398 attacks and 382 deaths. Hitherto the epidemic has been confined to the poorer people, but it seems to be now spreading to the more well-to-do classes. A large number of the people are freely getting themselves inoculated against the disease. In Calcutta the latest report shows 170 deaths, a figure 155 in excess of the quinquennial average. A heavy mortality from cholera is reported among the pilgrims at the annual Ganges Fair at Sangor Island.

Feb. 6th.

A NOTICE appeared in the *London Gazette* of Feb. 21st intimating that Sir John Lynn Thomas will in future use the name of Sir John Lynn-Thomas.

CONTROL OF VENEREAL DISEASES.

Veneral Disease in Ontario.

ACCORDING to the evidence of those best qualified to speak with authority the war has increased the prevalence of venereal infection, or, at any rate, has afforded the means for collecting statistics with regard to many phases of the subject which hitherto have been more or less matters for conjecture. The gathering together of large numbers of men under military law has provided a favourable opportunity for collecting figures as to incidence, manner of infection, most potent means of spread, &c. In Toronto, in consequence, a great deal of very valuable information has been collected respecting the venereal problem in Ontario. Captain Gordon Bates, C.A.M.C., of Toronto, in a paper on the subject which was read by him at the annual meeting of the Canadian Public Health Association held in Hamilton, Ontario, on May 27th and 28th, 1918, and which was published in the *International Journal of Surgery*, September, 1918, pointed out that the vigilance of the army authorities showed that the situation in Canada as regards venereal disease was very serious. Many important facts were brought out in this paper, of which the following may be emphasised.

The great majority of venereal cases occurring in that part of the army stationed in and about Toronto were infected previous to enlistment. Whilst over 50 per cent. of the infections discovered by the military medical officers had taken place in Toronto, infected men came in both from every city and town in Ontario, from other provinces, from the United States, and from other parts of the world. The social conditions surrounding the infection of each individual were investigated, and reliable information was procured with regard to the kind of prostitution existing in various parts of Canada. It was found that in a few parts of the Dominion organised prostitution existed on a somewhat large scale. In Ontario the problem to be faced was almost entirely that of clandestine prostitution, laws enforced by the police having practically eliminated organised commercial prostitution in the province. On the streets of towns in Ontario there were always hundreds of young girls ready to sell their favours to any stranger. As a rule these girls were under 20 years of age and generally worked during the day, depending largely on regular occupation for a living. It was found that a large number of them, almost a third of the cases met with, pursued this manner of life without charging a fee.

In Ontario the question of venereal disease aroused so much apprehension that various means have been tried in the endeavour successfully to combat its inroads. Colonel J. W. S. McCullough, head of the Ontario Board of Health, has been mainly instrumental in causing to be enacted laws of a drastic character calculated to improve the situation. The Venereal Diseases Prevention Act of Ontario covers the following points:—

1. The medical officer of health may examine any person under arrest who is suspected of being infected with venereal disease, and may order such a person to be isolated and treated if found to be so infected.
2. In cases in which the medical officer of health is credibly informed that any citizen is suffering from venereal disease, and has infected, or is liable to infect, other persons, the medical officer of health may cause that person to produce proof that he or she is, or is not, infected. If the person is found to be infected, the medical officer of health may compel him or her to be treated; the treatment may be carried out by the patient's private physician. If treatment is not carried out the patient may be quarantined and treated by the health authorities.
3. The medical officer of health, or a legally qualified practitioner appointed by him, may enter any house, outhouse, or premises in the daytime, as is the case with other infectious diseases, for the purpose of inquiry and examination into the state of health of the inmates, and may take measures for the treatment of persons found venereally infected, or for the prevention of fresh infections.
4. Every hospital receiving aid from Ontario under the Hospitals and Charitable Institutions Act shall make effective provision for the examination and treatment of venereal disease under a heavy penalty.
5. Advertisements relating to the cure or treatment of venereal disease are prohibited.
6. Anyone who knowingly infects another person with venereal disease is subject to a heavy fine or imprisonment.
7. The Provincial Board of Health of Ontario is given power to make regulations for the control of venereal disease.

Captain Bates gave as his opinion that if legislation was to be useful further organisations would be necessary to back up its provisions. He has advocated a Federal Department of Health in order to stimulate and coördinate action in the different provinces.

Veneral Disease in Montreal.

In Montreal the situation as regards prostitution is very different from that in Toronto. Here commercial prostitution prevails. The preliminary report of the Committee of Sixteen of Montreal (the committee of an unofficial organisation which investigated the vice conditions of Montreal) made the following statement with regard to the number of houses of prostitution in existence at the time of its survey.

The estimate as to the number of houses of commercialised prostitution, given by the officers of the morality squad, is that there are between 250 and 300, and they state that about six or eight hotels are operated almost exclusively as houses of assignation.

Veneral disease is very prevalent in Montreal. Over and above the numerous facilities for contracting infection supplied by commercialised prostitution, there are other circumstances which tend to favour the spread of veneral infections. Montreal is the only large port of Canada, as compared with the large ports of the world. Sailors from all parts sail in and out, and of course convey infection. Since the beginning of the war Canadian troops have come into Montreal to sail for their European destinations, and those who have returned have come back by the same route. No prohibition law has here been in force, and it is generally allowed that there is a close relationship between the incidence and prevalence of veneral infection and the consumption of alcoholic beverages. Many circumstances seem to combine to render the situation in Montreal, so far as the prevalence of veneral disease is concerned, of a very serious and menacing character. In the Province of Quebec there is no law to control the spread of veneral infection. At the General Hospital in Montreal three clinics are held each week at which there is an average attendance of 125 men and women suffering from veneral disease, of whom about 60 per cent. are suffering from gonorrhoea and 40 per cent. from syphilis; and this is only one of the hospitals of the city.

The Problem in Eastern Canada.

From this short account it will be seen that veneral disease is unduly prevalent in Eastern Canada, and that in Ontario and Quebec the conditions differ widely. Organised commercial prostitution is easier to cope with successfully than is clandestine prostitution. If civil authorities would act firmly, organised prostitution could be abolished, but the civil authorities have not learned to recognise the relationship between prostitution and veneral disease, and therefore frequently will take no adequate action, and prostitution is essentially a matter for the courts to deal with. It behoves the members of the medical profession, therefore, not only to concern themselves with the diagnosis and treatment of veneral disease in prostitutes, but to make it clear to the civil authorities that to allow prostitution to continue is a menace to the public health, and thus urge them rigidly to enforce the laws. Clandestine prostitution is also a difficult problem to solve. Members of this class are more numerous, are almost impossible to trace, and, being young, are more apt to be acutely infected.

There is little doubt that the war has increased the spread of veneral disease in Eastern Canada, but to what extent it is impossible to say. With the demobilisation of troops on a large scale the menace will be intensified unless effective preventive measures are put into force, but the general public is being educated as to the dangers of uncontrolled prostitution with its consequent aftermath of veneral disease, and preventive measures are now demanded. Women are taking a prominent part in the movement.

THE AVIATION INSURANCE ASSOCIATION.—This association has been formed to accept at home and abroad all risks in connexion with both heavier and lighter-than-air craft. The association consists of Underwriting Members of Lloyds, the Eagle, Star, and British Dominions Insurance Company, Ltd., and the Excess Insurance Company, Ltd. The business will be controlled by a committee of five and offices have been opened at No. 1, Royal Exchange Avenue, E.C.

MATERNITY AND CHILD WELFARE.

Conditions of Childbirth in India.

THE unhappy conditions of childbirth among Indian women have long been a matter of concern. In 1885 the Countess of Dufferin's Fund was organised to meet the need. As time went on the number of medical women practising in India, both Dufferin and missionaries, increased, midwives and nurses were trained, and a number of Indian assistant and subassistant surgeons finished their course and left the schools and hospitals. This but served to bring into relief the enormous amount of preventable mortality which occurred both among mothers and children, due to puerperal sepsis, pelvic contraction—sometimes extreme—misplacements, accidents occurring during labour, pregnancy diseases, and ignorance on the part of the people as to methods of artificial feeding of infants in cases where the mothers had died during childbirth.

Victoria Memorial Scholarships Fund.—In order to combat this unnecessary suffering and loss of life the Victoria Memorial Scholarships Fund came into being in 1903, formed by Lady Curzon, for the improvement of the conditions of childbirth in India. It was expressly stated in the nineteenth annual report of the National Association for Supplying Female Medical Aid to the Women of India for the year 1903 (p. 27) that the funds were to be applied to the training of the hereditary dai caste as opposed to dais and midwives taken from other classes whose training might be left to the agencies already carrying it on. A fund was collected amounting to Rs. 6,86,784.15.8, from which an annual income of Rs. 34,000 was derived. This was distributed among the different provinces, sufficient being retained to carry on the central expenses and to assist special enterprises in the interests of the objects of the Fund. The money was kept apart from the Dufferin Fund and the organisation was carried on by an executive committee selected from among the members of the central committee of the Dufferin Fund. In each province the Fund was administered by the Inspector-General, and in each centre where operations were started a local committee was formed.

Endeavours were then made to induce dais to attend courses of instruction. Many of these women were 40, 50, 60, or even 70 years of age; some were deaf, some were blind; none had any previous education or had ever exercised their mental faculties; they were very prejudiced and jealous of their reputation, and, in addition, were honestly convinced that no one could teach them anything as regards normal labour. The results of these efforts were variable; in some cases the classes had ceased to exist or could not be formed, and it was suggested that the grants might be used for the training of women not of the dai caste. This has by degrees led to the almost total abandonment of the objects of the Fund, which in many cases has been used for different but allied objects.

Report of Fund for 1918.—The report for 1918 gives a large amount of information, including reports and suggestions from centres, papers by medical women on improvement of the conditions of childbirth, several of which are published in complete form, together with extracts from the annual reports. The following is a summary:—

The greatest success in the training of indigenous dais has been met with in the Punjab where training combined with supervision is being carried on at Amritsar, Ambala, Ferozepore, Bhiwani, Multan, and Lahore; in addition at Ludhiana 124 indigenous dais have been trained. The report of the Inspector-General of Civil Hospitals, Punjab, shows that a large extension of this work is contemplated in the near future.

Next most successful are the Indian States where large numbers of the hereditary dai caste have been trained at Bhopal, Patiala, Indore, Hyderabad, Baroda, Gwalior. In some of these States supervision is also carried on.

In some stations in the United Provinces large numbers of hereditary dais have been trained, but with the exception of Agra there is no system of supervision, and the Inspector-General in his memorandum expresses the opinion that the work has been useless and says that it is his intention to discontinue it.

In Baluchistan training and supervision are carried out at Quetta. In the Central Provinces training and supervision are carried out at Nagpur. In Bengal and Bihar and Orissa indigenous dais have been trained, but there has been no supervision. The general opinion is that no improvement has resulted, and the Surgeon General and other medical officers in Calcutta recommend that operations should cease and all efforts should be concentrated on the endeavour to replace the hereditary dai by a better educated woman. The Bombay and Madras Presidencies are outside the operations of the Fund.

Several of the papers written by medical women describe successful work among dais. Others give graphic accounts of the difficulties to be

overcome, and especially of the enormous amount of sepsis which in two papers received is estimated as causing (at times) a mortality of 80 per cent. of natural labour! There is also a number of useful suggestions for methods by which improvement can be secured.

Suggestions for improvement.—Many questions are discussed concerning the education of the public, such as the need for instruction to women of all classes on care during pregnancy and labour and care of young children; instruction to men in essentials of the same, and instruction to boys and girls in primary schools on the same to a modified extent; baby shows; trained health visitors employed systematically in towns and villages, &c. The miscellaneous suggestions for improvement are important, and as follows:—

1. Women's hospitals should be more attractive, and more care should be taken to make labour comfortable there absolutely safe.
2. We should specialise so as to eliminate painful labour as much as possible.
3. There should be hospitals for infectious diseases, with provision for puerperal fever.
4. Trained dais should be subsidised and should work in connexion with hospitals.
5. They should be provided with outfits for proper work.
6. Mothers should be provided with maternity packets.
7. Training of dais should be carried out by women doctors (or other teachers) specially set apart for the purpose. Every training school should be inspected.
8. Standards of training should be laid down, and especially a sufficient number of cases of labour conducted should be insisted on before examination.
9. An effort should be made to link up all present methods of training.
10. Maternity centres should be started; also milk depôts, baby clinics, and baby shows.
11. Prevention of puerperal fever should be taken up by the Anti-Tuberculosis League as saving two organisations.
12. Certificated dais should be allowed to bring their cases into maternity hospitals and conduct them according to rules, taking the usual fee from the patient.
13. Notification of puerperal fever should be required.
14. Free maternity homes should be provided.
15. Creches for young children should be provided.
16. State-aided maternity benefit is needed.
17. A Central Midwives Board for India is required.
18. A book should be prepared for girls' schools on the lines of "light, life, and cleanliness."
19. The organisations now engaged in war work should after the conclusion of the war take up the question of maternity welfare.

Class of women trained.—A point regarding which there is much difference of opinion is whether work among the hereditary dai class should be continued, or whether it should be given up and all effort concentrated on providing a better class of midwife.

There is a general agreement that this last would be the simplest and easiest solution of a difficult problem; but while the Surgeon-General and other officers of the Indian Medical Service in Bengal and the Inspector-General, United Provinces, give a definite pronouncement that this course should be followed, the majority of the medical women who discuss the question declare it impossible as a practical measure.

The opinion of most of the medical women is that for general improvement of childbirth in India work amongst hereditary dais must be continued, but that it is useless unless it is combined with some scheme of continued supervision of their work by means of midwife supervisors or health visitors. The registration and supervision of midwives is recommended in a large number of papers. The Inspector-General, United Provinces, on the other hand, is of opinion that the day for registration and supervision in India is still far distant. The medical women who recommend the measure, however, do not properly intend that a Bill identical with the English Midwives Act of 1905 making registration and supervision everywhere compulsory should be immediately introduced into provincial legislatures, but rather that powers should be given to municipalities to introduce registration and supervision where public opinion is ready for it. Several municipalities have already started schemes which recognise this necessity, the dai being persuaded to submit to supervision by means of a notifying fee. These municipalities would probably be glad to have more power in order that the schemes might be more effectively carried out and the notifying fee either reduced or discontinued. Experience has shown, moreover, that in work among dais no amount of persuasion, kindness, or money rewards will bring about a successful result, unless combined with very definite orders from the representatives of Government. The measure about to be introduced into the Punjab is recommended to the notice of all local Governments. This provides for the registration and supervision of all dais and midwives in the province who receive a Western training, and it ensures a definite standard of training and examination.

Improvement of the condition of childbirth in India is a problem at least as difficult and at least as important as the prevention of plague; and it is only by patient work frequently unsuccessful and experiments constantly repeated that a successful issue can be expected.

As regards the class of women to be trained the committee feels the warmest interest in all efforts to train and assist midwives of a superior class but it feels that, until proof is given that the majority of women in a province, rich and poor alike are employing these midwives for natural labour, the funds of the Victoria Memorial Scholarships must be expended entirely for the improvement of the hereditary dai class.

It is felt that more might be done both by the Imperial and local Governments to relieve the terrible conditions, the suffering, and loss of life endured by so large a section of the population.

Statistics show that in recent years the birth-rate in India has been falling, with a tendency for the death-rate to rise. If the welfare of infant life is to be taken in hand the first step is undoubtedly improvement of the conditions of childbirth. Measures to provide milk depôts, creches, and baby clinics are of little use to children who die before or during birth, or within the first month after.

One very evident fact is the lack of statistics relating to childbirth. It ought not to be more difficult to discover the number of deaths following childbirth than the number following plague, and the discovery that certain cities were peculiarly affected in this way could be used as a strong incentive to their municipalities, and to their principal residents, to effect improvements.

The committee hopes that medical women will send information as to success or non-success, and from time to time further ideas and suggest one which may be of service.

It is proposed in future to publish the Victoria Memorial Scholarships Fund report as a booklet, separate from that of the Dufferin Fund, and to make it as far as possible an accurate account of measures taken for improvement of the conditions of childbirth in different parts of the country.

Maternity Nursing in London.

A recent meeting of the Central Council for District Nursing in London confirmed the findings of the conference held last June on the subject of maternity nursing in London, with special reference to the position of district nursing associations in relation thereto. This conference was attended by representatives of Government departments, of the London County Council and other municipal services of London, of the Central Midwives Board, by representatives of the medical profession, voluntary hospitals and district nursing associations, and by others interested in the subject. Sir William Collins, M.P., who presided, summed up the result under the three heads of the debate. There was a consensus of opinion: (a) That it is desirable that maternity nursing should be undertaken by district nursing associations in London. (b) That there should be co-operation with the hospitals for the purpose of nursing the extern maternity cases. There was some difference of opinion in regard to (c) the relation of maternity nursing to midwifery, and in particular whether it is essential that the maternity nurse should hold the C.M.B. certificate. The last part of this question has been practically settled by the decision of the Local Government Board that, in order to qualify for a grant under the Maternity and Child-Welfare Act, 1918, "the maternity nursing should be undertaken by a woman with the certificate of the O.M.B.; failing this qualification the Board should be furnished with evidence of her competency if a grant is claimed." It appeared to the council that the possession of the C.M.B. certificate would be especially necessary if, and when, the maternity nurse was expected to attend at the time of the delivery.

A second conference was held on Sept. 30th, when the conclusions of the June meeting were discussed, the general opinion arrived at being that the nurses would willingly undertake the maternity district work, but owing to war conditions there was an insufficiency of staff for the purpose. The combining of maternity and general nursing was considered from experience to be safe. Night work was regarded as a possible difficulty to be overcome, and might require additional staff. The employment of home helps would be useful, but this should be apart from the associations. The difficulties of small associations and the single-handed parochial nurse might be met by federation of the smaller associations, or their affiliation to a central association for the supply of special nurses. The council has been in communication with the Local Government Board as to the conditions on which a grant might be forthcoming, and some practical outcome is expected.

MEMORIAL ON DIET AND INFLUENZA.—The Bread and Food Reform League has sent a memorial to the Local Government Board asking for public attention to be drawn to the following points: (1) That dietaries lacking in antineuritic vitamins found especially in the germ and aleurone cells of cereals; (2) that dietaries also lacking in antiscorbutic vitamins, found abundantly in fruits and vegetables, produce deficiency diseased conditions which make people although apparently in excellent health physically unfit, and less able to resist epidemic infection; and (3) that a memorandum published by the Food (War) Committee of the Royal Society states that wrong methods of cooking impair the value of antiscorbutic vitamins. The memorial is signed by a number of medical men. Further particulars may be obtained from the honorary secretary of the league, Miss May Yates, at 37, Essex-street, London, W.C.2.

Obituary.

ARTHUR CONNING HARTLEY, M.D., F.R.C.S. EDIN.

WE regret to announce the death of Dr. A. C. Hartley, of Bedford, which took place on March 5th, at the age of 54 years. He was the second son of the late William Hartley, of Comlongon, Dumfriesshire, and was educated at Edinburgh University, graduating M.B., C.M. in 1888. As a student he took honours in most of his classes, and entered largely into the life of the University, in the work of the Students' Representative Council, and in the direction of the rifle company of the Queen's Brigade, in which he obtained many shooting prizes. He obtained his "full blue" for running, drilling, and shooting. After qualifying he was for a year resident medical officer of Chalmers Hospital, Edinburgh, and was also house surgeon at the Royal Maternity and Simpson Memorial Hospital, Edinburgh. In 1891 he took the degree of M.D. with honours at Edinburgh University, and in 1893 became a Fellow of the Royal College of Surgeons, Edinburgh.

Dr. Hartley began his practice in Bedford in 1892, and he soon secured the confidence of a large number of patients in the town and county. He was a firm believer in post-graduate courses for practitioners, and paid frequent visits, during his holidays, to Edinburgh for this purpose. He was medical examiner and referee for a large number of life assurance companies and held the post of Admiralty surgeon for Bedford and district. In 1896 the Mayor of Bedford presented him with the testimonial of the Royal Humane Society for rescuing a girl from the flooded Ouse. Later he was elected president of the Bedford Medical Society, and in 1912 he presided over the South Midland Branch of the British Medical Association. He took an active part in starting the Bedford District Nursing Association and the Bedfordshire Rural Nursing Association, and acted for a number of years on the executive committee of the local branch of the Society for the Prevention of Cruelty to Children. His scanty leisure he spent in various forms of field sports—golf, tennis, shooting, skating, or curling. Dr. Hartley was enthusiastic on the subject of universal military service. He himself served 28 years in many capacities in the Volunteer and Territorial Corps under three Sovereigns, having taken his part at Queen Victoria's Edinburgh visit and at her funeral, and at the Coronations of King Edward VII. and King George V. In 1917 the King conferred on him the Territorial Decoration. He received King Edward's silver medal for long service in 1909, and was on service as major in the R.A.M.C. (T.), attached to the Headquarters Staff of the East Anglian Royal Engineers, at the beginning of the war. In November, 1917, he relinquished his commission on account of ill-health. Dr. Hartley was a life-long believer in the principles of total abstinence from alcoholic drinks.

In 1902 Dr. Hartley married Miss Margaret Stewart, eldest daughter of the late Mr. James Stewart, and he leaves three daughters and one son.

RICHARD WHISH BRIGSTOCKE, M.R.C.S. ENG.,
L.M., L.S.A.

By the death of Richard Whish Brigstocke, affectionately known as the "old doctor," which took place recently at his residence, Scole, Norfolk, there has passed away a well-known practitioner who, in his early days, formed one of the party sent out to Africa to find Livingstone, and who formed an interesting link with Sir Thomas Browne, of "Religio Medici" fame.

Mr. Brigstocke received his medical education at St. Bartholomew's Hospital in the years when the late Sir James Paget was warden, and afterwards enjoyed the personal friendship of that great surgeon. He qualified in 1859 by taking the M.R.C.S. Eng., L.M., and L.S.A., when he entered the Navy, in which service he remained till 1866. It was while engaged in operations for the suppression of the slave trade that he joined the party which went in search of Livingstone, and he afterwards spent some time with the famous missionary and traveller. On leaving the Navy Mr. Brigstocke went to Beyrout, where for 40 years he had a large and cosmopolitan clientèle. As an accoucheur, he acquired a wide reputation, and was frequently called in consultation to widely separated parts of Syria, often taking

long journeys on horseback into the mountainous parts of the country. From 1870 to 1882 he was lecturer on obstetrics and diseases of women and children and medical jurisprudence at the Syrian Protestant College and Medical School at Beyrout, lecturing both in Arabic and English. He also spoke French fluently. For services rendered to the Turks during the cholera epidemic in 1875 he received from the Sultan the Order of the Medjidie, and for similar services to the Italian colony at Beyrout in 1896 he was awarded by the King of Italy the Chevalier Order of St. Maurice and Lazare. An enthusiastic gardener and woodman, Mr. Brigstocke spent his retirement in strenuous work of this kind, wielding the axe with skill and power. He leaves a wife, four daughters, and two sons, the eldest of whom has seen service with the R.A.M.C. in Egypt and France.

Dr. Michael Beverley, as a personal friend, writes:—

It will interest many of your readers to learn that the Brigstockes are descendants by marriage with the author of the "Religio Medici." It is recorded in the preface of the "Posthumous works of the learned Sir Thomas Browne, Kt., M.D., late of Norwich, the public is here presented with manuscripts for which we are obliged to Owen Brigstocke, Esq., grandson by marriage to the author." This is clearly seen on reference to the late Mr. Charles Williams's genealogy of Sir Thomas Browne. "Owen Brigstocke married Anne, the daughter and co-heiress of her grandfather, Sir Thomas Browne, who left his property to his grand-nephew, Owen Brigstocke." My old friend, although ignorant of his connexion with so distinguished an ancestor, told me that he was descended from this Owen Brigstocke, and promised to try to get the pedigree up-to-date. His long illness and death has prevented this.

The War and After.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

THE following additional casualties among the sons of medical men are reported:—

Capt. N. H. Owen, Rifle Brigade, died at Sheerness from pneumonia, third son of Dr. J. M. Owen, J.P., of Fishguard, Pembrokeshire.
Major H. C. R. Saunders, D.S.O., East Yorkshire Regt., previously reported wounded and missing, now believed killed on March 30th, 1918, eldest son of the late Mr. A. R. Saunders, F.R.C.S., of Kingston, Jamaica.
Lieut.-Commander G. S. Parsons, R.N., died at Portsmouth, sixth son of Dr. C. Parsons, of Tunbridge Wells.
Mr. F. C. Godding, died at Brisbane, Australia, from disease contracted at Anzac, son of Surg.-Gen. C. C. Godding, C.B., R.N.

THE HONOURS LIST.

The following awards to medical officers, for services in connexion with the military operations in Mesopotamia, are announced:—

C.I.E.—Lt.-Col. P. F. Chapman, I.M.S.; Maj. and Bt. Lt.-Col. H. J. Crossley, R.A.M.C.; Maj. and Bt. Lt.-Col. J. D. Graham, I.M.S.; Maj. and Bt. Lt.-Col. W. H. Hamilton, D.S.O., I.M.S.; Maj. (temp. Lt.-Col.) C. A. Sprawson, I.M.S.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned for distinguished and gallant services and devotion to duty in a despatch received from the Commander-in-Chief of the Mesopotamian Expeditionary Force:—

Army Medical Service. Col. (temp. Maj.-Gen.) A. P. Blenkinsop, C.B., O.M.G.; Col. S. F. St. D. Green.

Royal Army Medical Corps.—Temp. Capt. O. G. Adams; Capt. E. B. Alabaster; Capt. C. W. Armstrong; Temp. Capt. K. D. Aueridge; Temp. Capt. T. Barbour; Capt. W. O. P. Barrett; Temp. Capt. S. B. A. Batt; Temp. Capt. P. G. A. Bott; Capt. J. M. H. Campbell; Temp. Capt. J. M. Clements; Capt. W. MacC. Conley; Capt. (acting Maj.) F. C. Cowtan; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) H. J. Crossley; Temp. Capt. L. W. Davies; Capt. and Bt. Maj. L. Dunbar; Temp. Capt. A. Feilding; Lt.-Col. and Bt. Col. M. H. G. Fell, O.M.G.; Capt. G. Finch; Temp. Capt. R. Fraser; Capt. J. H. M. Frohisher; Capt. A. H. Gosse; Maj. (acting Lt.-Col.) R. Griffith; Capt. (acting Maj.) T. J. Hallinan; Temp. Maj. F. N. H. Hiden; Temp. Capt. A. H. H. Howart; Temp. Capt. A. R. Jennings; Temp. Capt. E. Kidd; Capt. C. J. H. Little; Capt. (temp. Maj.) A. G. J. MacIlwaine, C.I.E.; Temp. Capt. O. G. McKay; Temp. Capt. G. S. Marshall; Capt. and Bt. Maj. W. McNaughton; Lt. W. McWilliam; Temp. Capt. W. M. Menzies; Capt. J. P. Mitchell; Capt. J. J. Molyneux; Capt. J. M. Morrison; Lt.-Col. (temp. Col.) H. M. Morton, D.S.O.; Capt. W. H. O'Riordan, M.C.; Capt. C. J. Penny; Temp. Capt. H. H. Raw; Capt. H. G. Robertson; Capt. O. O. Shackleton; Temp. Capt. W. A. Shatto; Capt. A. Shepherd; Temp. Capt. W. J. D. Smyth; Temp. Capt. E. H. Uvall; Capt. J. W. Weddell; Capt. K. J. T. Wilson; Capt. J. H. Wiseman; Capt. P. A. With; Maj. T. J. Wright, D.S.O.; Capt. R. H. Yoland; Capt. J. R. Yourell.

Indian Medical Service.—Capt. H. W. Acton; Temp. Capt. F. B. Ambler; Maj. (temp. Lt.-Col.) W. M. Anderson; Lt. B. C. Ashton; Lt.-Col. W. R. Battye, D.S.O.; Lt.-Col. P. F. Chapman; Capt. E. Cotter; Capt. A. M. Dick; Lt.-Col. A. Fenton; Lt.-Col. F. W. Gee, C.I.E.; Temp. Capt. E. A. M. J. Goldie; Maj. and Bt. Lt.-Col. C. M. Goodbody, C.I.E., D.S.O.; Maj. and Bt. Lt.-Col. J. D. Graham; Maj. and Bt. Lt.-Col. W. H. Hamilton, D.S.O.; Lt.-Col. W. Lethbridge; Capt. R. B. Lloyd; Maj. P. P. Mackie; Lt.-Col. H. G. Melville, C.I.E.; Maj. J. Morison; Temp. Capt. S. B. Mukerjee; Capt. J. J. H. Nelson, M.C.; Capt. C. M. Plumtree; Maj. E. A. Roberts, D.S.O.; Maj. (temp. Lt.-Col.) C. A. Sprawson; Maj. J. Taylor, D.S.O.

Indian Medical Department.—2nd Cl. Asst. Surg. W. R. Bennett; 1st Cl. Asst. Surg. G. W. Cairns; 2nd Cl. Asst. Surg. M. G. Coombes; 1st Cl. Asst. Surg. A. W. Dyer; 2nd Cl. Asst. Surg. E. S. Feegrade; 1st Cl. Asst. Surg. H. J. J. Garrod; 2nd Cl. Asst. Surg. A. W. Hazle; 4th Cl. Asst. Surg. G. D. Rodrigues; 4th Cl. Asst. Surg. W. J. Rowe.

In a despatch received from the Vice-Admiral, Dover Patrol, dealing with the operations at Zeebrugge and Ostend, in April and May last year, the medical arrangements are referred to in the following terms:—

I desire to make a special reference to the praiseworthy manner in which the medical officers and their staff, and volunteer helpers, devoted their skill and sympathy to those who were wounded in these operations. Fighting at such close quarters, the casualties were bound to be numerous, and the wounds likely to be severe. Staff Surgeon James McCutcheon, M.B., was the senior medical officer of the force. In an able report that officer outlines the work of his staff, and the circumstances in which it was done, and I trust that the Lords Commissioners will agree with me in thinking that no branch of the naval service surpassed in zeal and ability the efforts of the medical branch to prove itself worthy of its profession, and of the occasion. I have selected with difficulty from a number of very deserving officers the names of three to be representative recipients of such promotion as their Lordships may be able to award for these operations to the medical branch of the Royal Navy.

CIVIL MEDICAL PRACTITIONERS' WAR SERVICES.

Under date March 4th the War Office has issued the following list of civil medical practitioners whose names have been brought to the notice of the Secretary of State for War for valuable medical services rendered in the United Kingdom in connexion with the war:—

J. McK. Ackland; G. Alexander; C. W. Alford; C. M. Anderson; W. D. Anderson; W. M. A. Anderson; J. F. Atkins; S. E. Atkins; J. P. Atkinson.

W. Baigent; W. E. Baker; G. F. Barnes; W. R. Bates; R. A. Bennett; P. H. Benson; H. Bentley; H. W. Bethell; J. Black-Milne; R. H. Blake; J. P. Blood; C. Bolton; V. Bonney; H. Bott; R. O. Bowman; J. C. O. Bradbury; F. Brightman; T. B. Broadway; E. H. Brock; T. H. Brown; M. Bryson; H. M. Bunday; W. F. E. Burgess; M. Burnet; A. C. Burrows; H. B. Butler; W. B. Butler.

G. Y. Caldwell; J. E. G. Calverley; W. E. Cant; J. W. Carr; A. J. Carter; B. G. Carter; J. W. Caton; E. Cautley; W. L. Chubb; J. Chute; Miss I. M. Clarke; J. J. Clarke; T. W. Clay; P. P. Cole; L. Cole-Baker; D. W. Collings; E. G. Colville; C. T. T. Comber; C. J. Cooke; J. G. Cooke; H. P. Cosobadie; E. A. R. Covey; G. Cran; E. P. Cumberbatch; C. Curd; F. C. Curtis.

H. G. Dain; J. D. Davies; H. C. Dent; L. G. Dinon; L. C. T. Dobson; J. A. Drake; C. E. Drennan; D. Drummond; R. H. W. Dunderdale; M. A. Dutch.

H. F. Baland; A. M. Elliot; W. F. Brskine; W. J. Essery; C. J. Evers; R. W. T. Ewart; H. L. Ewens; E. H. Ezard.

G. Faris; E. Farr; F. Fawcett; W. B. Featherstone; R. A. Fegan; E. C. Fenoulhet; A. C. Ferguson; W. A. Fogerty; S. C. Fowler; T. W. Fowler; A. D. Fraser; A. M. Fraser; L. Fraser; A. L. Fuller; P. Furnivall.

M. H. Gardiner; A. T. B. Gavin; Miss G. Gazdar; H. W. Gell; W. D. Gimson; B. Glendinning; L. G. Glover; H. J. Godwin; R. M. Going; T. A. Goodfellow; W. A. Gordon; T. P. Gostling; R. Grant; Miss E. Gray; H. T. Grav; G. R. Green; E. C. Greenwood; G. Grindlay; R. M. Grogono; C. N. Groves; G. Gunn; L. G. Guthrie.

G. R. Harland; H. Head; J. W. Heekes; W. Hern; H. T. Herring; C. M. Hewer; E. S. E. Hewer; T. B. Hickley; D. W. C. Hood; G. H. J. Hooper; S. B. Hulke.

J. Ingram; W. S. Inman. A. Jackson; P. S. Jakins; J. R. Jeffrey; R. C. Jewesbury; R. G. Johnson; G. J. Johnston; G. Jonckheere (Louvain); S. E. Jones; J. F. Jordan; N. H. Joy.

D. Kennedy; F. W. Kennedy; J. C. King; T. S. Kirk; Miss A. Kirker; Mrs. A. V. Knox.

F. Lace; J. H. W. Laing; G. J. Lane; F. C. Langford; C. P. Lankester; J. B. Lawford; P. C. W. Laws; A. Lawson; C. F. Le Sage; E. R. Lewis; P. G. Lewis; J. E. Linnell; F. S. Lloyd; J. D. Lloyd; T. E. Lloyd; G. H. Lock; J. P. Lockhart-Mummery; H. L. Lewis; A. Lyndon; E. Lynn.

D. R. Macdonald; J. Macdonald; H. J. Macevoy; G. MacGill; H. H. B. Macleod; F. R. Mallett; H. Marshall; F. E. Marston; W. Martin; W. B. Maurice; L. T. McClintock; A. A. McConnell; K. C. McKenzie; H. L. McKisack; G. E. P. Meldon; J. H. Menzies; J. Metcalfe; I. G. Modlin; A. P. Mooney; A. Morison; A. E. Morison; E. F. Morris; R. D. Mothersole; W. T. Mullings; R. A. Murray. J. F. Nall; G. P. Newbolt; W. Norbury; A. E. Normington; W. W. Nuttall.

E. J. P. Olive; W. W. Ord; D. R. Oswald.

T. E. Pallett; F. S. Palmer; J. I. Palmer; T. W. Parkinson; A. R. Parsons; A. G. Paterson; E. le F. Payne; H. G. Pennell; E. V. Perry; J. P. Philip; T. B. Poole; J. F. Porter; J. C. Potter; R. H. Powers; G. L. Preston; W. A. Pride; E. L. Pritchard; B. G. Pullin. R. M. H. Randell; E. F. Reeve; P. Rendall; J. Richardson; G. A. Roberts; Mrs. A. L. L. C. Robson; J. D. Robson; W. Roughton; A. R. P. Russell.

F. J. Sadler; H. Sainsbury; F. J. Sarjeant; G. J. Scale; R. E. Scholefield; C. R. Scott; R. W. Selby; H. T. Sells; R. H. Shaw; O. B. Shelswell; E. W. H. Shenton; D. A. Shields; J. Simcock; J. D. Sinclair; J. A. Small; W. Smeeton; G. Smith; J. A. Smith; Sir

T. R. H. Smith, Bart.; J. C. Smyth; R. V. Solly; T. F. Southam; J. A. Southern; G. R. Sparrow; H. J. Spon; E. Stainer; L. E. Stamm; G. S. Stanfield; R. de S. Stawell; O. T. Stephenson; G. St. George; H. W. M. Stover; A. J. Swallow.

F. T. Talbot; J. G. C. Taunton; A. Tennyson-Smith; G. C. Thomas; W. E. Thomas; W. T. Thomas; A. Thompson; C. Thompson; J. Thomson; M. Thomson; N. F. Ticehurst; S. A. Tidey; H. T. M. Townsend-Whitling; R. H. Trotter; A. J. Troughton; R. Turner.

G. B. Wainwright; R. A. Walter; A. H. Warde; W. Washbourn; R. de C. Wheeler; W. S. Whitcombe; C. P. White; E. F. White; G. B. M. White; A. Wightwick; L. E. Wigram; S. M. Wilcox; R. Wilkins; D. J. Williams; H. C. Williams; J. A. Wilson; M. S. Wilson; G. M. Winter; G. V. Worthington; R. B. Wright; D. T. Wylie.

E. C. Young; J. C. Young.

OBITUARY OF THE WAR.

SAMUEL COWELL PHILSON, L.R.C.P. EDIN.,
M.R.C.S. ENG., C.I.E.,

COLONEL, ARMY MEDICAL SERVICE.

Colonel S. C. Philson, who died of pneumonia following influenza on Nov. 4th, 1918, at the age of 58 years, was son of the late Dr. William Philson, of Cheltenham. He pursued his medical studies at King's College, London, and at Edinburgh, graduating in 1883, and taking the M.B. degree in 1884, and joined the Army Medical Service—afterwards the Royal Army Medical Corps—in 1885. He took part in the Burmese and Chin Hills expeditions of 1889 and 1890, for which he received the Frontier medal and three clasps. In 1897 he was promoted to the rank of major, and was stationed at the Base Hospital, Rawal Pindi, during the Tirah campaign. In 1900 he accompanied the Earl of Hopetoun—afterwards Marquis of Linlithgow—to Australia, and remained on His Excellency's staff during Lord Hopetoun's tenure of the Governor-Generalship. In 1902 he was placed in medical charge of the special camp at the Alexandra Palace for Colonial troops who came to England to represent the overseas dominions at the late King's Coronation, and for this he received the King Edward Coronation medal. In 1905 he was promoted lieutenant-colonel, and in 1911, being again stationed in India, he was awarded the Coronation Durbar medal. He was promoted full colonel in 1915 and in August, 1916, was appointed Assistant Director Medical Services, Karachi Brigade, to reorganise the medical arrangements there after the "troop train tragedy." His successful work during the past two years has just been recognised by the award of the C.I.E., but the publication of this honour came too late for him to know of it before his death. A friend writes in the *Pioneer*: "'Sammy' Philson was a man of great administrative ability and was transferred from Lucknow to Karachi shortly after the Sind train disaster, since when he has been responsible for the whole of the medical arrangements connected with the war base at that port. In December, 1917, having reached the age for retirement, he should have retired by the order of the War Office, but at the request of the Commander-in-Chief (in India) he agreed to remain at his post in Karachi until the end of the war."

Colonel Philson married in 1896 the second daughter of Brigade Surgeon Lieutenant-Colonel J. H. Condon, I.M.S., who survives him. He leaves no children.



Lieutenant FRANK P. Y. HUET, A.A.M.C. (Dental Services), who died from the effects of broncho-pneumonia on Feb. 3rd at No. 1 Australian General Hospital, Sutton Veny, was educated at Sydney Grammar School, New South Wales, and enlisted in the 1st Battalion A.I.F. Upon the demand for an increase of dental units in the A.A.M.C. Lieutenant Huet was transferred to the Dental Services and granted a commission on March 1st.

WILLIAM PEARSON COWPER, L.R.C.P. & S. EDIN.,
TEMPORARY SURGEON, R.N.

Temporary Surgeon W. P. Cowper, R.N., who died on Feb. 1st at the age of 38 years from illness contracted nearly three years previously while serving on board H.M.S. *Valiant*, was second son of Mr. William Cowper of Hendon, and formerly of Kirkwall. Educated at the Edinburgh Academy he took the Scottish triple qualification in 1903,



after which he filled the posts of house surgeon to St. Mary's Hospital, Plaistow, house physician to the West End Hospital for Nervous Diseases, house surgeon and house physician to the Hampstead General Hospital, and house surgeon and anaesthetist to the Royal Westminster Ophthalmic Hospital, where he was assistant surgeon at the time of his death. He had been in practice in London as an ophthalmic surgeon, but on the outbreak of war he was at once granted a

commission as surgeon in the Royal Navy. He was first appointed to the R.N. Barracks, Devonport, in 1915 to the R.N. Hospital, Devonport, and later to the R.N. College, Keyham; in 1916 he joined H.M.S. *Valiant*. He was a keen sportsman, and was for several seasons one of the forwards of the 1st London Scottish Rugby team. In 1908 he played for the Barbarian team, and in 1915 captained a Navy team at Plymouth. Golf and fishing were also favourite pastimes, the latter of which he had an opportunity of enjoying when off duty during the time he served with the Grand Fleet at Scapa.

JOHN STANLEY COCKS, M.R.C.S., L.D.S.,
CAPTAIN, R.A.M.C.

Captain J. S. Cocks, who died on Jan. 29th at Beyrout from broncho-pneumonia following typhus, aged 29 years, was youngest son of Mr. J. W. Cocks, of Torquay. Educated at Mill Hill School and Guy's Hospital, he took his L.D.S. diploma in 1912, and on the outbreak of war offered himself as a dental surgeon and was refused. He took his Final Conjoint Examination in 1914 and joined the Special Reserve. He was attached to the 9th York and Lancashire Regiment and remained with them until June, 1915, when he proceeded to Alexandria and was attached to a hospital in Cairo. Early in 1916 he joined the 7th Mounted Brigade Field



Ambulance, which he accompanied to Salonika. After about 18 months in Greece and Macedonia the Ambulance returned to Egypt and was disbanded, the transport being torpedoed and sunk without loss of life on the voyage from Salonika to Alexandria. Captain Cocks then became attached to the 3rd Lowlanders Mounted Field Ambulance, and took part in the operations around Beersheba at the commencement of Allenby's drive into Palestine. At this time his health gave

way and he was invalided back to the base, being in hospital at Port Said for some weeks. After recovering he was appointed to take charge of No. 1 Egyptian Detention Hospital, then at Gaza, but later at Jaffa and Beyrout. During his illness he was removed to the American College Hospital, where he was under the care of Dr. Graham until his death. He was in the Near East for three years and seven months without being granted any home leave.

Correspondence.

"Audi alteram partem."

THE POSITION OF THE DEMOBILISED PRACTITIONER.

To the Editor of THE LANCET.

SIR,—One of the conditions arising in the course of demobilisation does not seem to have received sufficient attention, that of the status and prospects of the medical practitioners who have been serving abroad. In spite of the efforts which have been made by the Committee of Reference of the Royal College of Physicians and of the Royal College of Surgeons, and of the Central Medical War Committee, to make the best possible temporary arrangements to preserve the interests of practitioners called to the service of the country abroad, the future of many of these is precarious.

We know that those medical men who have been working at home have generally behaved with the utmost fidelity towards those who have been called away, but it is not upon them alone that the future depends. Public bodies, it is hoped, will reinstate as far as possible to their former posts the medical officers who before the war held appointments in their service. It will be an important aid to the returning men if their former patients will continue to call them in, and it may be pointed out that the practitioners returning from service with the Army will come home with an enlarged experience and are likely to be of greater value than before to the patients to whom they return. They have in most cases been engaged in duties which have increased their professional knowledge and skill.

We are, Sir, yours faithfully,

NORMAN MOORE,

President of the Royal College of Physicians of London;

G. H. MAKINS,

President of the Royal College of Surgeons of England.

March 11th, 1919.

To the Editor of THE LANCET.

SIR,—May we ask attention to one of the problems of demobilisation which we think deserves sympathetic consideration from the general public? Many doctors who throughout the war have held commissions in the Navy, the Army, or the Air Force have now to face the question of return to civil practice. This is for them far from an easy matter. The natural growth of their practices has ceased during their absence. In spite of loyal help given, in most cases, by their colleagues—who deserve all thanks for their ungrudging efforts—and by professional committees, to hold together the practice in the interest of the absentee, the normal wastage due to deaths, changes of residence, &c., has had the effect of materially reducing the practice from what it was in 1914. Beyond such unavoidable influences there is risk of curtailment from other causes.

It is known to us that many of those who have been absent with the Forces of the Crown view their future with grave anxiety. In a profession like medicine, where the work is essentially personal, the future of those men evidently depends largely on the attitude of the general public. It is greatly to be hoped, therefore, that every patient will feel it an honourable duty to return, whenever possible, to his old doctor, and that public institutions will re-instate, as far as they can, to their former positions those medical officers who have sacrificed so much at the call of the Empire.—We are, Sir, yours faithfully,

R. W. PHILIP,

President of the Royal College of Physicians of Edinburgh;

R. MCKENZIE JOHNSTON,

President of the Royal College of Surgeons of Edinburgh, March 11th, 1919.

THE ASSOCIATION OF PANEL COMMITTEES AND NOTIFICATION FEES.

To the Editor of THE LANCET.

SIR,—I have to inform you that at their last meeting the Executive Committee of the Association of Panel Committees resolved:—

That the committee are of opinion that, in view of the fact that the reduction of fees for the notification of notifiable diseases was to be

regarded as a war measure, the fee for such notifications should be reduced from 1s. to 2s. 6d. forthwith; and that the President of the Local Government Board be so informed.

The committee regret that medical men as a class should be marked out for a decrease of remuneration in such times as these. I am, Sir, yours faithfully,

B. A. RICHMOND,
Secretary.
Staple House, Chancery-lane, W.C.,
March 10th, 1918.

A PUBLIC DENTAL SERVICE.

To the Editor of THE LANCET.

SIR,—In your issue of March 8th you commented, in a leading article dealing with the report of the Departmental Committee on Dental Practice, on the proposal to establish a Public Dental Service. Sect. XII., par. 135 of the Departmental report runs as follows:—

"If it is accepted that it is the duty of the State to ensure, in the national interest, that its citizens shall be maintained in a state of good health and working efficiency, we have no hesitation in stating that adequate arrangements for keeping the teeth of the people in a sound condition are one of the essentials to this end."

The report then proceeds to consider the matter under two headings: (1) treatment for children; (2) treatment for adults. With the former I do not propose to deal, but with reference to the latter I would call your attention to an article written by me, and published in *Public Health* of April last year; this was reprinted in the *British Dental Journal* in the following September, and has caused considerable interest and controversy, owing chiefly to the fact that the appalling condition of the mouths of the masses of the population was not appreciated by many of the correspondents, who mostly objected to the comparatively small provision made for conservative dentistry and the emphasis laid on the extraction of septic teeth, to furnish a clean mouth, and the provision of dentures.

Now in this report it is expressly stated that—

"Satisfactory conservative treatment of the teeth of the present adult population is not possible owing to past neglect; a large amount of dental work is, however, needed for extractions and the provision of dentures."

The scheme drawn up by me was the result of considerable experience as a command dental inspector in the Army, I having been chiefly instrumental in bringing about the reorganisation of the dental treatment in the service. This was accomplished by taking the work out of the hands of the civilian dentist, which was both unsatisfactory and expensive, and undertaking all the work by whole-time Army officers. The pivot of the scheme was a large central workshop for the provision of dentures, and dental officers with clinics in the camps and towns where troops were stationed, the impressions and bites being taken in the clinic and sent through the post to the central workshop and the finished denture returned to the clinic. This method of centralising mechanic work proved a great success so far as speed, efficiency, and economy were concerned, and the workshop in my command produced about 80,000 dentures in three years, all of a very high character.

In my original article I gave, with permission of the War Department, my balance-sheet for two years' working, showing that these dentures had been made at a workshop cost of 7s. 6d. each, and in certain months this had been as low as 5s. 6d., and I pointed out that with a larger turnover this could be reproduced under civil control. I then proceeded to sketch a scheme for a State service, showing how, if these were sold for 15s. each to the public, the surplus of payments over cost would be sufficient to run a service, doing extractions and fillings free of charge, without going to the Treasury for a grant. I purposely "sailed as near the wind" as possible, "keeping my figures and estimates as low as I could, so as to arrest attention and cause controversy, and in this I succeed beyond expectation. As an answer to criticisms one of my dental officers, Mr. Percy Millican, and myself recast my balance-sheet, and in an article published under his name in the *British Dental Journal* of Feb. 15th last, we have what I believe to be a scheme, sound financially, stable, and one that would be acceptable to the majority of the profession. This, with certain extracts from the paper, I append.

The following is an estimated prospectus for an area dentally served by a series of clinics, under the same

inspectorate, with a central workshop capable of supplying 70,560 dentures for 42,336 patients, and completing 212,562 fillings per annum.

| Receipts. | £ | Expenditure. | £ |
|----------------------------------|----------|---|----------|
| 70,560 Dentures at £1 10s. ... | 105,840 | 2 Inspectors, salary at £900 ... | 1,800 |
| 212,562 fillings without fee ... | — | Insurances for pensions and sickness 20 senior dentists at £600 ... | 12,000 |
| | | Insurances, bonus and sickness 50 junior dentists at £450 ... | 22,500 |
| | | Insurances, bonus, and sickness "Mechanics' pay, bonuses, and insurance ... | 4,000 |
| | | Upkeep of surgeries ... | 29,240 |
| | | Upkeep of workshop ... | 6,000 |
| | | Cost of materials ... | 1,000 |
| | | Central administration ... | 17,640 |
| | | Balance ... | 2,000 |
| | | | 7,010 |
| | £105,840 | | £105,840 |

* Mechanics' Pay, &c.

| | |
|---|---------|
| Workshop superintendent, salary at £450, pension, and sickness insurance ... | £ 620 |
| Ten foremen mechanics at £250, pensions, and insurance ... | 4,430 |
| 60 A class mechanics at £200, insurance for bonuses ... | 14,560 |
| 40 B class mechanics at £156, insurance for bonuses ... | 7,280 |
| Sickness insurance for A and B mechanics ... | 800 |
| 20 A class boys at £35; 20 B class boys at £28; insurances for bonus and sickness ... | 1,560 |
| | £29,240 |

The points to be borne in mind in reading this prospectus are chiefly as follows:—

1. Each dentist works 33 hours a week, there being 49 weeks to the working year.
2. Each dentist doing conservative work only is able to average three fillings an hour.
3. The average time taken to prepare a mouth for dentures (fillings excepted) is one hour per patient.
4. A foreman mechanic assisted by ten mechanics and four boys can complete 144 dentures a week.
5. The average ratio of "prosthetic" patients to dentures is as 3 : 5 (some patients needing two).
6. The inspectors, workshop superintendent, and foremen mechanics would be life servants of the Service, retiring on a pension after 25 years' service, whereas the dentists and junior mechanics would contract for a limited period and receive a bonus on retirement, or the option of filling vacancies on the permanent staff.

If such a scheme were adopted under State guarantees we could in a limited number of years give clean mouths to the people, with the improvement in health and efficiency which your readers will appreciate, at the minimum cost to an overburdened Treasury. Its educating influence with the masses would be enormous, the improved professional outlook would attract the right class of student, the unqualified (to be taken on the Register) would work under a scientific inspectorate, to the advantage both to themselves and their patients, and, above all, the very elasticity of the scheme would allow a universal service to be built up which could, in the future, take over the necessarily increased conservative treatment for a dentally educated public, which, when dentures on this enormous scale were no longer needed, could be financed out of the insurance benefit by a very small additional contribution which the beneficiaries would, by then, be willing to pay.

I am, Sir, yours faithfully,

F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S. ENG.,
Bournemouth, March 9th, 1918. Major, R.A.M.C.

TRIMETHENAL-ALLYL-CARBIDE IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—My attention was drawn to trimethenal-allyl-carbide, which is manufactured by Clement and Johnson, chemists, 13, Sicilian-avenue, London, and I was struck by their announcement that no complications occurred in influenza if this remedy were used early enough. So with a perfectly open mind I sent for half a gallon and began the treatment of all influenzas occurring amongst my staff at the Borough Sanatorium for Infectious Diseases and in those admitted as patients to that institution. My experience has been very limited, but I can certainly say that where the remedy was given during the first day or two of the disease there were no complications, and all made very satisfactory recovery. In such a terrible visitation as we had at that time (October to December, 1918) I felt glad to try a remedy that would act

as a prophylactic or curative agent in the disease. I wrote to Messrs. Clement and Johnson asking them if they would give me the names of any medical men who had used the drug. They did so, and I wrote them with the enclosed questionnaire. They all answered these questions with the exception of one medical man who, you will remember, had a letter in THE LANCET a good many weeks ago on the same subject. Those who replied in nearly every case sent me very full information as to what they had done. I have made extracts from all these replies and I am sending them to you, hoping that you will be good enough to insert them in THE LANCET at an early date, and I shall be glad if you would ask that any other medical men who have used "yadil" in influenza would give their experience. It is only by a method of this kind that we can arrive at the truth as to the efficacy of the drug when given in influenza.

I am, Sir, yours faithfully,

Town Hall, Sunderland, Feb. 20th, 1919.

H. RENNEY.

* * Dr. Renney sends us extracts of letters which he has received from 10 doctors who have been using yadil, and who have answered the questions which he sent to them. The general conclusions may be summarised somewhat as follows:—

1. In about how many cases of influenza have you used "yadil"?—Information has been received from doctors of 1623 cases of influenza which have been treated by yadil.

2. What was the dose given to adults, and how often?—The dosage varied between 15 minims and half an ounce. The majority preferred to give 31 every three hours or three times a day. One observer gives 15 to 30 every four hours, and considers that larger doses are of no additional value; another gives 31 three times a day to 54 every four hours or three times daily, well diluted, and says that he has never had any signs of overdose. In some cases the medicine is ordered to be given before food, in others, either immediately before or afterwards, in others, no definite time for administration is given.

3. In how many of these cases was treatment by "yadil" commenced on the first or second day of the disease?—From two doctors no information was given on this point. In about 915 cases yadil was given during the first or second day of the disease.

4. Were there any complications in cases treated early by "yadil"?—Of the 915 cases which were treated early by yadil six developed complications. Of these, four were cases of slight bronchitis, one was a delicate woman with heart disease in whom pneumonia supervened, and the sixth was that of a man who went out of doors against orders.

5. If so, what other remedy was given for the pneumonia?—Cresolate, ether with or without pot. iod. Farke Davis's pneumonia phylacogen? Influenza vaccine (Pfeiffer's bacillus, pneumococcus, streptococcus)?—One doctor says: "In cases met, too late garlic plus pot. iod. and digitalis were given for pneumonia."

6. In your cases of influenza pneumonia how many recoveries had you under "yadil" treatment?—Only three doctors give information on this point. One had four cases of pneumonia, three of which recovered. In the fatal case yadil was not given regularly. Another reports 13 cases of influenza pneumonia, all of which recovered. Only one had the drug before becoming desperately ill. Most of these cases were very inadequately nursed; many could not obtain the necessary milk, and many could not have the necessary fresh air. Another had two cases of pneumonia in his own family. Yadil was not commenced until several days had elapsed. Both recovered.

7. Any other information.—"A combination of aqua menth. pip. and aqua chlorof. masks the odour of yadil." "In three cases yadil had to be discontinued, as it seemed to produce bowel irritation. He generally used yadil in combination with sodic sal." ED. L.

THE ESSENTIAL PRINCIPLES OF SUCCESSFUL MEDICAL ADMINISTRATION.

To the Editor of THE LANCET.

SIR,—Whilst it may be well at all times to keep in view the duties of the medical profession—the members of which are probably more loyal to duty than are human beings engaged in any other pursuit—would it not be better at this juncture to insist a little more upon the peculiar and vital rights of "the profession" itself? To me the constant repetition of "the duties" of the medical profession, and the apologies which seem to follow any mention of its own rights, smacks of hypocrisy. We, the present generation of medical men, must realise that we are the trustees of a noble function; and that upon us, who alone know this function, devolves, as surely as does the care of the stricken, the duty of ensuring, as far as lies within our power, that the conditions under which, and the men by whom this function in future will be exercised, shall not be such as will menace the efficient performance of it.

Dr. W. Gordon in your issue of March 1st has enunciated "four points" which are vital. With singular precision and breadth of view he has outlined the essential first principles of medical professional efficiency. Let any one of these be abused in practice, and sooner or later the function of the profession will be impaired. If we do not demand of the

candidates for medical licence high standards of general education, and for those who obtain it the same emoluments and freedom which are enjoyed by men of ability, character, integrity, and education in other fields of endeavour, the status of the profession will certainly fall, and it will cease to attract to it the only class of men to whom should be entrusted its sacred functions. The results to humanity it is needless to elaborate.

Surely our duty is clear. If impending or future legislation is calculated to produce these results we must be in a position to guide and re-direct it. For this purpose concerted action of the present members of the profession is imperative. If we cannot prevail upon the people's Parliamentary representatives to safeguard what is at once the interest of medicine and of the people, we must have an effective organisation of our own. If only a trade union is effective in these socialistic days, then it must be considered.

We must insist upon the rights of the profession as much as upon its duties, for if the first are ignored, the latter will cease to be fulfilled. We must not fear the charges of self-interest which may be levelled at us. There are truly occasions on which *apparent* egoism is in reality altruism. The rescuer is not egoistic when he beats into insensibility the clutching drowning man whom he would save. The would-be husband is not egoistic when he insists that his intended wife, whose future he desires to be happy, must be one who loves him dearly. In such instances *apparent* egoism is in reality the essential foundation of benevolent altruism. So is it at this juncture with our profession. We must insist that it be not hampered or harmed by the ill-directed acts of those whom it is verily its religion to save. We must see to it that no legislation be effected which will render the life or working conditions of the medical man such that medicine will cease to attract to it men of that high integrity, character, education, and honour to whom alone the inexorable "laws of necessity" require that the functions of an exalted and sacred calling must ever be entrusted.

I am, Sir, yours faithfully,

Millford, Surrey, March 3rd, 1919. W. J. GRANT, M.D., &c.

DISLOCATION OF TEETH.

To the Editor of THE LANCET.

SIR,—With reference to the two cases of dislocation of teeth reported in THE LANCET of March 1st by Dr. H. M. Savery the following case will perhaps prove of interest. Corporal I. fell whilst lifting an aeroplane engine and struck his face against a projecting part. He sustained a cut tongue and one of his upper central incisors was knocked out. He reported to me immediately, bringing the tooth with him, and as it looked quite clean I at once simply replaced it, exerting firm pressure. After suturing the tongue and arranging for him to have milk diet for some days I sent him back to work. This took place in September last, and upon examining him to-day prior to his demobilisation I found the tooth quite firm, and he informed me that for months past he has been able to bite with it in the ordinary way and without pain or discomfort. I find, however, he has had two "gumboils" since the accident. These have left no trace, and at the present time there is no sign of inflammation, and the man is quite satisfied with the result. I may add that his upper incisors are very large and prominent.—I am, Sir, yours faithfully,

WALTER H. ANDERSON,

R.A.F., Shoreham-by-Sea, March 3rd, 1919. Captain, R.A.F.M.S.

ROYAL DEVON AND EXETER HOSPITAL.—The annual meeting of the friends of this institution was recently held. The committee has decided to erect a new wing to the hospital, primarily for the reception and treatment of discharged soldiers and sailors, and secondarily to provide additional accommodation for young children, &c. An appeal will shortly be made to the residents for £20,000 for the purpose of carrying out the scheme.

WHILE it is now becoming quite common for women to secure seats on the governing authorities, the election of Dr. Florence Erin Smedley to the Worthing town council on March 4th provides the first instance in the county of Sussex of a woman doctor becoming a town councillor. Mrs. Smedley has for some time been acting medical officer of health for West Sussex, also school medical officer. She took her degrees in London in 1906, and was at one time surgeon at the Children's Hospital, Sheffield.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Ministry of Health Bill.

IT was not found possible to commence the Committee stage of the Ministry of Health Bill on Tuesday, March 11th, as originally contemplated.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 5TH.

Women Medical Officers in Military Hospitals.

Mr. ACLAND asked the Secretary for War whether he had considered the disabilities suffered by women medical officers employed in military hospitals owing to their not being allowed, under the Army Act, to hold Army rank; and whether he would have this legal disability removed in view of the pledge in the Government's election manifesto to remove all existing inequalities in the law as between men and women.—Mr. CHURCHILL replied: I am not aware that women doctors employed in military hospitals suffer disabilities on this account. A large number of civil medical practitioners are employed full time in such hospitals under exactly similar conditions. As regards the latter part of the question, it is not proposed to introduce legislation on this point during the present session.

Physicians' and Surgeons' Voluntary War Service.

Replying to Viscount WOLMER, Mr. CHURCHILL stated that he regretted that he could not publish a list of physicians and surgeons who had given voluntary service at military and auxiliary hospitals during the war and the periods for which they had given their services, as there was no list of the kind available.

THURSDAY, MARCH 6TH.

Lunatic Asylum Discharges.

Captain TUDOR-REES asked the Pensions Minister whether it was in conformity with his instructions for parish doctors to certify a discharged soldier or sailor for a lunatic asylum; and, if so, whether he would abolish this practice, which attached a taint of pauperism to the patient, and would order that before a discharged man was removed to an asylum he should be certified by a medical board of not less than three members.—Sir L. WORTHINGTON-EVANS answered: The Lunacy Acts require a certification to be made by registered medical practitioners; the medical practitioner may happen also to be the parish doctor, but it would only be as registered medical practitioner and not as parish doctor that his services would be required. I am sending my honourable and gallant friend a copy of a circular issued to local committees last year, in which the procedure to be adopted for certification is explained.

Captain TUDOR-REES: Will the right honourable gentlemen promise to consider the proposal with regard to discharged men having to be certified by a board of not less than three medical men?—Sir L. WORTHINGTON-EVANS: If the honourable gentleman will do me the honour of reading the circular he will see that steps are taken to keep the patient from all Poor-law taint.

Tuberculous and Shell Shock Cases.

Sir M. BARLOW asked the Pensions Minister whether any and, if so, what effective steps had been taken for the general open-air treatment of tuberculous and shell shock cases by means of farm colonies or otherwise; whether he had approached the Board of Agriculture in the matter; and, if not, whether he would consider, with the Board of Agriculture, the appointment of a small interdepartmental committee, with an outside chairman, to consider the whole matter.—Sir L. WORTHINGTON-EVANS answered: I am making arrangements for the treatment of shell shock cases on the lines suggested. At the present disabled soldiers suffering from shell shock are admitted to military neurological hospitals, where in nearly every case land is available and is utilised for this treatment. With regard to tuberculosis, I am taking steps in conjunction with the President of the Local Government Board to appoint such a committee as my honourable friend suggests. All the Government Departments concerned are being taken into consultation.

MONDAY, MARCH 10TH.

Grants for Medical Referees.

Mr. JOSEPH JOHNSTONE asked the Secretary to the Local Government Board whether he was now prepared to recommend to the Treasury that the supplementary grants approved of by Parliament in August, 1914, for medical referees, consultants, &c., supplementary medical services, and nursing grants, should now be paid; and whether he would be prepared to consult with the repre-

sentatives from societies and Insurance Committees as to the administration of these special grants.—Major ASTOR (Parliamentary Secretary to the Local Government Board) replied: Preliminary conferences are at the present time taking place between representatives of the medical profession and the Commissioners preparatory to a general review of the medical services for insured persons including questions of possible extensions. When the results of these conferences are available and of further conferences on the same subject with representatives of Approved Societies and Insurance Committees, I hope to be in a position to consider what action can best be taken in regard to special grants of the kind referred to in the question.

Salaries of Irish Poor-law Medical Officers.

Sir WILLIAM WHITLA asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been called to the conditions of service and the absence of a uniform graded scale of payment to Poor-law medical officers in Ireland; and whether he proposed to take any steps to improve their conditions of service with a view of provision being made therefor in the Ministry of Health legislation.—Mr. MACPHERSON answered: The Local Government Board have urged all the boards of guardians throughout Ireland to make graded scales of payment to the Poor-law medical officers, with the result that 143 boards out of a total of 154 have granted improved remuneration to their medical officers. There are only 11 boards of guardians which have not improved the salaries of their medical officers, and these are again being urged to adopt graded scales of salary. With regard to the latter part of the question it will receive my consideration.

Ministry of Health for Ireland.

Mr. DEVLIN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he had received a resolution from the National Association of Insurance Committees in Ireland, representative of 900,000 industrial workers, demanding the establishment of a separate Ministry of Health for Ireland; and whether, in view of this and other recommendations from similar representative bodies throughout the country, he would consider the advisability of carrying out the suggestion contained in the resolution.—Mr. MACPHERSON replied: The resolution referred to has been received. The Government was strongly urged by very important sections of the medical profession in Ireland and by Irish representative societies and bodies interested in health matters to extend the provisions of the present Bill to Ireland, and having regard to such representations agreed to do so.

Whisky for Medical Purposes.

Replying to Captain Sir B. STANIER, Mr. MCCURDY (Parliamentary Secretary to the Ministry of Food) stated that the Food Controller was satisfied that the release of an additional 50 per cent. of spirit recently sanctioned was resulting in a very material increase in the quantities available for the general public; and that it should be normally possible for spirits to be purchased, at any rate in small quantities, when required for medical purposes.

Qualification of Apothecaries' Assistants.

Sir JAMES AGG-GARDNER asked the Home Secretary whether he could now state what action, if any, had been taken under Section 4 (b) of the Poisons and Pharmacy Act, 1908, to enable certified assistants to apothecaries to be registered as pharmaceutical chemists or chemists and druggists.—Mr. SHORTT (Home Secretary) replied: This matter is now under the close consideration of the Pharmaceutical Society, and it is hoped that before long a by-law in the sense indicated will be submitted for the approval of the Privy Council.

Influenza and Cholera in Bombay.

Mr. BENNETT asked the Secretary for India whether he would give the latest information that had reached him as to the recent epidemics of influenza and cholera in the city of Bombay, together with the number of deaths from cholera in that city, and the total number of deaths from influenza in India in 1918 and the present year.—Mr. FISHER (on behalf of Mr. MONTAGU) answered: The Secretary of State has received the following telegram from the Government of India: The first influenza epidemic in Bombay city was in June last, and was responsible for over 1600 deaths; subsequent virulent outbreaks occurred in September, October, and early in November, during which period the mortality in Bombay city exceeded the normal by 14,678. Besides bacteriological investigation, relief measures consisted of treatment in hospitals, house-to-house visitation, free supply of milk and woollen jackets to prevent pneumonia, opening of roadside dispensaries in several wards, and supply of free medicine. Cholera appeared in epidemic form during the second week of December and continued till the third week of February. The disease was mainly confined to mill districts, and recent strikes not only aggravated it but prolonged its duration. Deaths reported

in Bombay city from cholera during the period number 9589. In view of the scarcity prevailing in neighbouring districts steps were taken to segregate immigrant labour in special camps, &c. Deaths from influenza in India as a whole in 1918 are calculated at 5,000,000 for British India, and 1,000,000 for Indian States.

Oatmeal and Influenza.

Mr. STURROCK asked the Food Controller whether he was aware that widespread dissatisfaction existed in Scotland over the price of oatmeal, still the staple food of the great bulk of the people; whether it was the case that oatmeal costs at least 50 per cent. more than flour; whether the health-giving properties of oatmeal were such that with the present danger of the influenza epidemic it was urgently desirable that the price of oatmeal should be brought down to a better standard; and whether he could promise early action in this matter.—Mr. MCCURDY replied: It is the case that at the present time the price of oatmeal is greater by approximately 50 per cent. than that of flour, and I hope that it will be possible to make an early announcement of a reduction of price. I am not, however, aware of the widespread dissatisfaction to which the honourable Member refers.

The Opium Convention of 1912.

Sir J. AGG-GARDNER asked the Prime Minister whether he would state what action had been taken, or was in contemplation, with a view to bringing before the Peace Conference the need for international co-operation in putting into force the articles of the Opium Convention of 1912 for the control of the production and distribution of cocaine, morphine, heroin, opium, and other drugs of addiction.—Mr. HARMSTWORTH (Under Secretary for Foreign Affairs) answered: His Majesty's Government hope to be able to bring this question before the Conference with a view to the adoption of a resolution binding the Powers represented at the Conference to the speedy enactment and enforcement of the laws, regulations, and measures contemplated by the Opium Convention of 1912 for the purpose of confining to medical and legitimate purposes the manufacture, sale, and use of opium, morphine, cocaine, and similar noxious and habit-forming drugs, such a resolution to be made binding on the enemy Powers.

TUESDAY, MARCH 11TH.

Demobilisation of Doctors and Nurses.

Mr. LEONARD LYLE asked the Secretary for War whether, in view of the fact that there were still 9593 doctors and 20,141 nurses in the Army, he would arrange for at least 500 of the former and 2000 of the latter to be granted immediately indefinite leave pending formal demobilisation, so that their services might be utilised in coping with the serious amount of illness amongst the civil population.—Captain GUEST (on behalf of Mr. CHURCHILL) answered: As my right honourable friend explained to the honourable Member a week ago, every endeavour is being made to release as many doctors and nurses as can be spared. It is considered that if the proposal to give leave to doctors and nurses pending demobilisation were concurred in, it would seriously interfere with the steps that have been taken to release all those whose services can be spared. The latest returns available give the total number of trained and untrained nurses demobilised as 7441 since the armistice, and steps have been taken to demobilise large numbers of medical officers. This has now become possible owing to the removal of certain restrictions which delayed demobilisation.

Institutions for Mental Defectives.

Sir KINGSLEY WOOD asked the Home Secretary whether he would state how many institutions had been established under Section 35 of the Mental Deficiency Act for defectives of dangerous and violent propensities, and the number that were available to-day for such cases.—Mr. SHORTT (Home Secretary) replied: Three such institutions have been provided by the Board of Control. The first at Farmfield is intended for females only and is fully available. The second at Warwick is available for females only, but males will also be received there as soon as staff and houses can be provided. The third at Moss Side is at present in the occupation of the War Office, but the Board of Control hope that it will be available in a few months for the reception both of male and female patients.

DEATH OF DR. C. H. WISE.—Charles Henry Wise, M.D. (Irel.), L.R.C.P., M.R.C.S., L.S.A., J.P., died recently at Launceston, Cornwall, in his sixty-fifth year. The deceased was the eldest son of the late Mr. C. F. Wise, architect, of Launceston. He practised at Walthamstow, London, for many years, he held many public appointments, was deputy coroner for one of the Essex districts, a barrister-at-law, and a justice of the peace for Essex. He took a great interest in public affairs at Walthamstow, and was formerly a mayor for the borough. His health broke down some few years ago, and since then he has resided at Launceston.

Medical News.

OXFORD OPHTHALMOLOGICAL CONGRESS.—The congress will assemble at Keble College, Oxford, on the evening of Wednesday, July 9th, and meetings will be held on the following Thursday and Friday. A discussion on Preventive Ophthalmology will be opened by Mr. J. Herbert Parsons on Thursday. Friday will be given up to papers and demonstrations of cases. The annual general meeting will be held in the evening of July 10th. Members desirous of taking part are invited to communicate with the honorary secretary, Mr. Bernard Cridland, at Salisbury House, Wolverhampton.

SPECIAL POST-GRADUATE COURSE: LONDON SCHOOL OF MEDICINE FOR WOMEN.—In conjunction with the Fellowship of Medicine the London (Royal Free Hospital) School of Medicine is arranging a special post-graduate course on the Medicine and Surgery of the Liver and Gall-bladder. The lecturers are Dr. M. F. Lucas Keene, Dr. W. C. Cullis, Mr. J. H. Gardner, Dr. F. Ransom, Dr. Douglas Firth, Mr. Joseph Cuning, Mr. James Berry, Mr. Willmott Evans, and Dr. M. Schofield, and practical demonstrations will be included in the course. The first class will be given on Monday, March 17th, at 10 A.M., at the Royal Free Hospital, and the course will continue over two weeks following at the Hospital and at the Medical School, 8, Hunter-street, London, W.C.1. Further particulars from Miss L. M. Brooks, warden and secretary, at the above address.

ROYAL SUSSEX COUNTY HOSPITAL.—Speaking at Hove, at the annual meeting of the Royal Sussex County Hospital, on Feb. 27th, Mr. R. Ball Dodson, chairman of the governors, announced that the cost per bed occupied in 1918 reached £116; this was £22 per bed more than in 1917, while the cost in 1917 was itself £22 higher than in 1913. The hospital was called upon to deal during 1918 with 173 fewer soldier and sailor cases than in the previous year, but the institution's war record stood at nearly 3300 patients. The War Office, it was stated, had just sanctioned demobilisation of 50 beds. The year 1918 ended free from debt, thanks to the marked success of the emergency fund, for which an appeal was made by Earl Brassey, president, and the trustees. The sum of £10,554 10s. 10d. was received, and thus the deficit at the close of 1917 was liquidated. A permanent expenditure of 25 or 30 per cent. above pre-war figures is anticipated in the future. On the subject of venereal diseases the annual report referred to the present arrangement for the treatment as "temporary and provisional," and Mr. Dodson hoped the local authorities interested would consider the situation with a view to future provision without delay. While the hospital did the correct thing in founding the clinic, as it did at the request of the Local Government Board in a time of crisis, Mr. Dodson said it would be doing the wrong thing to continue the work under present conditions for a longer period than was necessary for the local authorities to make proper provision for its inevitable development. In view of the ever-increasing work he did not think the clinic should be continued under present conditions for more than another year. Personally, Mr. Dodson declared himself of the opinion that there was very little prospect of these diseases being stamped out until they were made notifiable.

ASSOCIATION OF PUBLIC VACCINATORS.—The annual meeting of this association was held on Feb. 14th, Mr. J. Foster Palmer, the President, in the chair. The President gave an address on "Our Foes: Psychological and Physical." Our psychological foes, of course, arose from the strange psychological character of the German race. It was held by certain of the Stoics that all who were driven to any disastrous action through their vicious folly or blind ignorance of known facts or sequences were insane. This definition, as Horace points out, may include entire nations as well as their rulers. Is it not possible that some psychological processes similar to that which exercised the minds of the Stoics may have evolved in certain rulers and nations during the nineteenth and twentieth centuries among the areas of Western civilisation? But we are face to face with a far more formidable foe on the physical plane in the influenza microbe which is now making such havoc in many countries. The importance of special attention being directed to this organism is evident on account of the well-known fact that epidemics of influenza have usually been followed by other epidemics of a more severe type. Is this the result of microbic evolution, of a change of type in the organism resulting in one of a more severe and virulent character, or is it only that the vitality of the victims of influenza has been so undermined that they fall an easy prey to other forms of

zymotic disease? The question is by no means a simple one, as there appear to be two different, and apparently opposite, conditions which favour attacks of influenza. One is a condition of reduced vitality from any depressing cause, and the other is a prolonged freedom from microbic infection, leading to loss of the immunity conferred by repeated slight attacks of microbic disease—a condition known as auto-inoculation and well recognised in the treatment of tubercle. The microbic-free overseas contingents suffered more severely and in greater proportion than those already in the trenches. In addition to bacterial research, notification of influenza ought to be generally insisted on, supplemented by a series of questions on the clinical aspect of cases, which might serve to shed some further light both on the prophylactic and curative treatment of the disease.

THE annual court of governors of the Royal Hospital for Diseases of the Chest, City-road, London, will be held at the Mansion House on Tuesday, March 18th, at 3.30 p.m.

THE fiftieth annual general meeting of the governors of the Royal National Hospital for Consumption, Ventnor, will be held at 33, Portland-place, W., on Wednesday, March 19th, at 3.30 p.m.

THE fourteenth annual meeting of the Association for Promoting the Training and Supply of Midwives will be held, by permission of Mrs. Mackinnon, at 10, Hyde Park-gardens, W., on Thursday next, March 20th, at 3 p.m., when the chair will be taken by Her Royal Highness Princess Christian.

ROYAL INSTITUTION.—Next Tuesday, March 18th, at 3 o'clock, Professor A. Keith will deliver the first of a course of four lectures at the Royal Institution on "British Ethnology—the People of Scotland."

ROYAL MICROSCOPICAL SOCIETY.—At the meeting of the society to be held at 20, Hanover-square, London, W.1, on Wednesday, March 19th, at 8 p.m., Lieutenant-Colonel Clibborn, C.I.E., will read a paper on "A Standard Microscope," and opportunity will be provided for the exhibition of new models and designs. The lecture-room will be available from 7 p.m. for the display of such exhibits by Fellows of the society, by manufacturers, and by others wishing to take part.

URBAN VITAL STATISTICS.

(Week ended March 8th, 1919.)

English and Welsh Towns.—In the 98 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 35.7 per 1000 in each of the two preceding weeks, fell to 31.9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 26.6, or 5.8 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 11.6 in Acton, 11.8 in Gillingham, and 12.6 in Edmonton, to 53.8 in Great Yarmouth, 54.5 in Wakefield, 58.3 in Bury, 60.7 in Blackburn, and 61.2 in Salford. The principal epidemic diseases caused 189 deaths, which corresponded to an annual rate of 0.6 per 1000, and included 48 from measles, 43 each from whooping-cough and diphtheria, 38 from infantile diarrhoea, 11 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 1.6 in Sheffield, 3.1 in Middlesbrough, and 7.3 in Rotherham; and diphtheria of 1.5 in Tottenham. The deaths attributed to influenza, which had increased from 224 to 3889 in the six preceding weeks, declined to 3218, and included 597 in London, 210 in Manchester, 149 in Liverpool, 134 in Birmingham, 119 in Salford, 106 in Bradford, and 93 in Leeds. There were 6 cases of small-pox, 1062 of scarlet fever, and 1182 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 0, 1095, and 1172 at the end of the previous week. The causes of 75 deaths in the 96 towns were uncertified, of which 14 were registered in Liverpool, 10 in Birmingham, 8 in Manchester, and 5 each in South Shields and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17.0 to 40.0 in the seven preceding weeks, fell to 34.5 per 1000. The deaths from influenza numbered 62, while in 450 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 78 and 618 respectively. The 920 deaths in Glasgow corresponded to an annual rate of 42.9 per 1000, and included 38 from whooping-cough, 9 from measles, 4 each from diphtheria and infantile diarrhoea, and 1 from enteric fever. The 180 deaths in Edinburgh were equal to a rate of 27.2 per 1000, and included 11 from whooping-cough, and 1 each from measles and diphtheria.

Irish Towns (Week ended March 1st).—The 466 deaths in Dublin corresponded to an annual rate of 60.0, or 14.8 per 1000 above that recorded in the previous week, and included 153 from influenza, 4 from infantile diarrhoea, 2 from measles, and 1 from whooping-cough. The 238 deaths in Belfast were equal to a rate of 30.9 per 1000, and included a fatal case each of whooping-cough, diphtheria, and infantile diarrhoea. (Week ended March 8th).—The 489 deaths in Dublin corresponded to an annual rate of 63.0, or 3.0 per 1000 above that recorded in the previous week, and included 148 from influenza, 3 from measles, 2 from whooping-cough, and 1 from infantile diarrhoea. The 233 deaths in Belfast were equal to a rate of 30.3 per 1000, and included a fatal case each of whooping-cough and diphtheria.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg.-Lieut. J. A. Stirling, who was invalided on account of ill-health contracted in the Service, to retain rank.

ARMY MEDICAL SERVICE.

Col. H. D. Rowan is placed on retired pay.
Col. H. C. Thurston retires on retired pay.
Temp. Col. L. S. Dudgeon relinquishes his commission and retains the rank of Colonel.
The undermentioned temporary Lieutenant-Colonels to be temporary Colonels: H. Wade, (Capt., R.A.M.C., T.F.), C. C. Obeyes.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. D. E. Courme retires on retired pay.
Major (acting Lieut.-Col.) E. L. Moss to be acting Colonel whilst specially employed as Assistant Director of Medical Services.
The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major and Bt. Lieut.-Col. F. Davidson and C. E. Sylvester-Bradley; Major F. A. Stephens; Temp. Major R. A. Obartres; Capt. E. C. Lambkin, J. G. Gill, W. J. Tobin.
To be acting Lieutenant-Colonels, whilst in command of a Medical Unit: Majors E. G. French, S. E. Lewis; Capt. (acting Major) J. R. Hill.
The undermentioned relinquish the acting rank of Major on re-posting: Capt. A. R. Wright, H. F. Joynt, A. E. Rieumont; Temp. Capt. G. D. Mathewson, S. B. B. Campbell, J. B. Haycraft, A. G. Hamilton, J. Hendry, J. W. Elliott, A. Leaming, C. H. S. Webb, A. L. Saunders, J. W. Dew, W. R. P. McNeight.
To be acting Majors.—Capt. E. C. Lambkin, Temp. Capt. R. MacDonald, R. L. Crabb, J. C. Robb, F. W. Diamond, G. O. Adney, A. Gray, A. T. Todd, C. F. Strange, W. K. A. Richards, A. G. Gilchrist, J. A. Currell, O. L. Forde, V. D. C. Wakeford, J. Buchanan, R. S. Barker, F. G. Ralphs, D. G. Wishart, E. B. Chipp, P. K. McCowan.
Temp. Major F. E. Watts, Can. A.M.C., to be acting Lieut.-Col. while employed at a Canadian General Hospital.
Temp. Capt. B. Hogan relinquishes the acting rank of Major on re-posting.
Capt. J. M. MacKenzie and J. E. Hepper, to be acting Majors whilst specially employed.
Capt. E. G. Shaw to be acting Major.
A. Griffiths, late temp. Capt. (acting Major) is granted the rank of Major.
E. H. Shaw, late temp. Capt., is granted the rank of Captain.
Lieutenants (temp. Capt.) to be Captains.—O. D. Jarvis, J. La F. Lander (acting Major) (to retain his acting rank), T. H. Sarsfield, J. A. Blinning, J. F. Bourke (acting Major) (to retain his acting rank), J. E. Reby.
Temp. Lieutenants to be temp. Captains.—W. W. Pearce, F. O. Stedman, J. H. Whiteside, G. R. Wilson, W. Robertson, O. Weinman.
A. Whitley, late temp. Captain is granted the rank of Captain.
Officers relinquishing their commissions.—Temporary Lieutenant-Colonels retaining the rank of Lieutenant-Colonel: A. Stewart, E. B. G. Newham, Maj. M. C. Wetherell, Temp. Maj. (acting Lieut.-Col.) H. MacCormac (retains the rank of Lieutenant Colonel); Temp. Maj. F. S. Langmead, F. C. Hart-Smith, and E. Black (retain the rank of Major). Retaining the rank of Major: Temp. Capt. (acting Major) G. Buchanan, J. P. Cahill, F. C. Greig, Temp. Hon. Major C. McNeill (retains honorary rank), D. W. Torrance, Temp. Hon. Maj. E. F. Kennedy (retains honorary rank); Temp. Capt. (retaining the rank of Captain) F. W. Bartlett, A. H. John, V. J. Batteson, J. A. Marsden, D. G. MacArthur, M. H. Pearson, W. B. Walker, H. H. Carter, R. C. Begg, H. H. Stiff, S. B. Nathan, R. S. Scott, S. Brice, S. R. MacKenzie, F. G. Chandler, G. H. Wilkinson, A. W. S. Siebel, J. H. Addinsell, J. B. Alexander, R. L. Rea, J. Hogg, R. M. Hewitt, H. C. Fox, T. J. Kelly, D. F. Curran, T. Tierney, J. R. Williamson, J. Tate, G. P. Barff, H. H. V. Welch, A. J. L. Speechly, W. S. Lindsay, C. P. Symonds, H. C. Mulholland, J. E. Magee, O. F. Nicholson, G. Y. Caldwell, H. U. Leembruggen, A. E. Fiddian, G. W. Huggins, M. S. Fraser, D. M. Hunter, J. H. Wilkinson, E. L. Council, W. A. Rea, W. A. Anderson, H. Yellowlees, D. Haig, C. E. Redman, C. M. Willmott, I. M. Edis, J. Elliott, H. A. R. E. Unwin, L. S. Davison, C. B. Goulden, C. R. Rockitt, N. Glegg, B. Kelly, V. L. Connolly, A. L. Vaughan, C. S. Thomson, A. S. Wilson, F. A. Anderson, W. F. Briskine, M. J. Johnston, R. D. Bridger, C. Butler, Temp. Capt. J. E. Briscoe, Temp. Hon. Capt. S. Wicks, G. S. Peppers, D. H. D. Oran (and retain the honorary rank of Captain), Temp. Hon. Lieut. C. E. Fearn (granted honorary rank of Captain), Temp. Lieut. retaining rank of Lieutenant: J. G. Glasgow, B. H. Stewart, J. Clarke, C. Edwards, R. H. Watt, R. Theron, A. S. Ransome, G. C. Maguire, A. L. Sutherland.

SPECIAL RESERVE OF OFFICERS.

Captains relinquishing the acting rank of Major on re-posting: C. V. Nicoll, T. O. Graham, J. C. Brash, G. V. Stockdale, G. G. Jack, H. D. Hollinson, W. Murdock.
Captains to be acting Majors: L. J. Shell, C. S. Staddon, D. Colombos, W. Broughton-Alcock, S. W. Lund.
Capt. H. T. Lamb, C. L. Gausson, S. A. Lane relinquish their commissions and retain the rank of Captain.
Lieutenants to be Captains: W. P. Nelson, R. H. Chadwick, J. G. McCann, A. F. M. Fuoss, G. E. MacAuley, I. H. Zortman, C. S. Parker, R. B. Britton, H. E. Rhodes, A. S. Westmorland.
To be Lieutenants: W. B. Watson (from Edinburgh University Contingent, O.T.C.), L. H. Bartram.

TERRITORIAL FORCE.

Major C. R. Laurie relinquishes his commission and retains the rank of Major.
Major H. A. Leebody to be an Assistant Director of Medical Services and to be acting Colonel whilst so employed.
Capt. (acting Major) F. J. Green to be Major.
Capt. (acting Lieut.-Col.) H. F. Humphreys relinquishes his acting rank on ceasing to be specially employed.

Capt. (acting Major) H. G. W. Dawson is granted the pay and allowances of his acting rank whilst holding the appointment of Deputy Assistant Director of Medical Services.

Capt. (acting Major) D. C. L. Fitzwilliams, G. H. Dominy, H. Henry to be acting Lieutenant-Colonels whilst specially employed.

Capt. M. G. Foster to be Major.

Capt. (acting Major) E. L. Martin and R. C. Clarke relinquish their acting rank on ceasing to be specially employed.

To be acting Majors whilst specially employed: Capt. A. M. Jones, Capt. P. J. Smyth.

Capt. E. Smeed relinquishes his commission and retains the rank of Captain.

1st London General Hospital: Lieut.-Col. Sir A. E. Garrod is restored to the establishment.

1st London Sanitary Company: Capt. (acting Major) F. E. W. Rogers relinquishes his acting rank on ceasing to be specially employed.

Lieut. R. W. Brearey to be Captain.

2nd London Sanitary Company: Capt. A. G. G. Thompson to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

Capt. D. Smith is now seconded whilst employed as Education Officer.

TERRITORIAL FORCE RESERVE.

Capt. J. Derham-Reid, from Welsh Border Mounted Brigade Field Ambulance, to be Captain.

Capt. T. H. Peyton, from 1st Home Counties Field Ambulance, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Lieut. Oscar Hilton is transferred to Unemployed List.

Dental Branch.—Capt. G. Dawson is transferred to Unemployed List.

INDIAN MEDICAL SERVICE.

Majors to be Lieutenant-Colonels: J. C. H. Leicester, H. Innes, W. S. Willmore, A. B. Walter, C. Hudson, L. T. R. Hutchinson, A. M. Fleming, E. L. Ward, J. N. Walker, V. H. Roberts, T. S. Ross, W. MacM. Pearson.

Captains to be Majors: O. A. B. Berkeley-Hill, W. L. Harnett, J. D. Sandes, A. H. Napier, A. E. Grisewood, D. L. Graham, R. B. Nicholson, J. A. Cruickshank, J. A. S. Phillips (St. Major), P. M. Rennie, H. M. Inman, E. B. Munro, F. O'D. Fawcett.

The King has approved the retirement, with the grant of honorary rank, of Lieut.-Col. A. R. S. Anderson.

The services of Major J. R. J. Tyrrell have been replaced at the disposal of the Government of India for employment in the Foreign and Political Department.—The services of Lieut.-Col. D. C. Kemp have been placed at the disposal of the Madras Government.—Major R. B. Lloyd has been appointed Civil Surgeon of Serampore.—Lieut.-Col. J. G. Hulbert (retired), Civil Surgeon, has been transferred from Fyzabad to Gonda; Lieut.-Col. Z. A. Ahmed (retired), Civil Surgeon, from Gonda to Bahrach.—Lieut.-Col. R. G. Turner, whose services have been placed by the Government of India, Army Department, at the disposal of this Government, has been appointed Civil Surgeon, Fyzabad.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ALLAN, J., M.D., M.C. Edin., has been appointed Medical Officer to the Exeter Dispensary.

BRASH, E. J. Y., B.A., M.B., B.C. Cantab., Medical Officer to the Exeter Dispensary.

COOMBE, R., F.R.C.S., Honorary Consulting Surgeon to the Exeter Dispensary.

ELLISTON, C. B., M.D., Ch.B. Edin., Medical Officer and Public Vaccinator for the Sthney District by the Helston (Cornwall) Board of Guardians.

HUTT, C. W., M.D., B.C. Camb., Whole-time Medical and School Medical Officer for Dudley.

LOOSELY, A., B.M., B.Ch. Oxon., Assistant Surgeon in the Ophthalmic Out-patient Department at the London Temperance Hospital.

Vacancies.

For further information refer to the advertisement columns.

Bath. Royal Mineral Water Hospital.—Res. M.O.

Bermondsey Parish Infirmary, Lower-road, Rotherhithe, S.E.—Med. Supt. £250.

Birmingham University Faculty of Medicine.—Asst. Prof. of Anatomy. £500.

Bodmin, Cornwall County Asylum.—Jun. Asst. M.O. £300.

Brighton. Royal Sussex County Hospital.—H.P. £100.

Buxton. Derbyshire, Devonshire Hospital.—Asst. H.S. £120.

Cardiff. King Edward VII.'s Hospital.—H.S. £200.

Carlisle. Cumberland Infirmary.—H.S. and H.P. £250.

Carlisle. Cumberland and Westmorland Asylum, Garlands.—Jun. Asst. M.O. £300.

Coventry and Warwickshire Hospital.—Res. H.P. £250.

Croydon County Borough. Cheam Tuberculosis Sanatorium.—Res. M.O. £400.

Derbyshire Hospital for Sick Children.—Female Res. M.O. £150.

East African Medical Appointments.—M.O. £400-£20-£500.

Federated Malay States Government.—Seven M.O., Grade II., and Three Female M.O. £350.

Glenties Union (Ireland). Doocherry Dispensary District.—M.O. £100.

Gloucester County Borough.—Asst. School M.O. and Asst. M.O.H. £400.

Greenock Corporation.—M.O.H. £700.

Hampshire County Council.—Temp. Asst. M.O.H. £400.

Hospital for Sick Children, Great Ormond-street, W.C.—P. Also H.S. £50. Also Cas. M.O. £200.

Liverpool City.—M.O. for Police Force. £750.

Liverpool. Royal Southern Hospital.—Res. P. and S. Also Non-Res. Cas. O.

London Lock Hospital and Rescue Home, Harrow-road, W., and 91 Dean-street, W.—Hon. Surg. to Out-patients.

Manchester, Ancoats Hospital.—M.O. £25.

Manchester, Baguley Sanatorium for Tuberculosis.—First and Second Asst. M.O. £400 and £350.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester Royal Infirmary Convalescent Hospital, Cheadle.—Res. M.O. £300.

Middlesex County Council.—Tuberc. M.O. £800.

Newcastle-on-Tyne Dispensary.—Res. M.O. £300.

Newcastle-on-Tyne. Hospital for Sick Children.—Res. M.O. £200.

Northampton General Hospital.—H.S. £200.

Norwich, Norfolk and Norwich Hospital.—H.S. £200.

Preston, County Asylum, Whittingham.—L.T. 7 gs. per week.

Prince of Wales's General Hospital, Tottenham, London, N.—Hon. Asst. P. in Out-patients' Dept. Also Sen. H.P. and Sen. H.S. £200.

Also Jun. H.P. and Jun. H.S. £120.

Ramsgate Borough.—M.O. and School M.O. £500.

Rhondda Urban District Council.—Asst. School M.O. and M.O.H. £400. Also Dent. S. £350.

Royal Free Hospital, Marlborough Maternity Section, Gray's Inn-road, W.C.—Female Res. M.O. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Refra. Asst. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £250.

Salford County Borough.—M.O. for Maternity and Child Welfare. £400.

Scarborough Hospital and Dispensary.—Two H.S.

Serbia, Hospital in.—Surg.

Shanghai Municipal Council Health Department.—Asst. Health Officer. £900.

Sheffield Royal Hospital.—Cas. O. £130.

Sheffield Royal Infirmary.—Cas. Officer. Also Oph. H.S. £150.

Southampton. Free Eye Hospital.—H.S. £150.

Stafford. Staffordshire County Mental Hospital.—Sec. Asst. M.O. £300.

Staffordshire Education Committee.—Female Asst. M. Inspectors. £400.

Stroud General Hospital.—H.S. £250.

Swansea General and Eye Hospital.—Res. H.P. £200. Also Sen. Student. £120.

Tiverton Hospital, Devon.—H.S. and Dispenser. £100.

Trimbridge Wells General Hospital.—Two H.S.

Union of South Africa Mental Hospital Service.—Six Asst. Phys. £380.

Wakefield, West Riding Asylum.—L.T. 7 guineas per week.

Walsley County Borough.—Tuberc. O. and Asst. M.O.H. £500.

West Riding of the County of York.—District Tuberc. O. £500.

Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.

Wolverhampton and Staffordshire General Hospital.—Two H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Harwich, Nantgarredig, and at Bridgnorth, in the county of Salop.

Births, Marriages, and Deaths.

BIRTHS.

HEARN.—On March 4th, at Goldhurst-terrace, South Hampstead, the wife of R. H. Hearn, M.B. Cantab., Captain, R.A.F., of a daughter.

HODGES.—On March 6th, at the Woodlands, Bishop's Stortford, the wife of Arthur Noel Hodges, M.B. Cantab., Captain, R.A.M.C., of a son.

MARRIAGES.

AITKEN—GARRETT-SMITH.—On March 6th, at Saint Columba's (Church of Scotland), Pont-street, S.W., David McCrae Aitken, F.R.C.S., temporary Captain, R.A.M.C., to Alice Garrett-Smith, only daughter of the late Godfrey Garrett-Smith, and Mrs. Garrett-Smith, of Roehampton.

PRICE-HARRIS—TWEMLOW-COOKE.—On March 4th, at Parish Church, Sidmouth, Major L. Price Harris, M.O., R.A.M.C.T., to Amy Victoria Mary, only daughter of the late Rev. D. J. Twemlow-Cooke, M.A. Cantab., and Mrs. Twemlow-Cooke, of Sidmouth.

SHIELD—MAESEN.—On March 1st, at Condomine-Chatelard, Basses-Alpes, France, Major Hubert Shield, M.O., R.A.M.C., T.F., 1st Northumbrian Field Ambulance, to Léontine, daughter of M. le Capitaine H. Maesen, Croix de Guerre, of Condomine-Chatelard, Basses-Alpes, France.

TAYLOR—BURKE.—On March 3rd, William Alfred Taylor, B.A., M.B., B.Ch., medical officer, Straits Settlements Medical Service, to Constance, widow of Captain Bernard Burke, Grenadier Guards.

DEATHS.

COLDSTREAM.—On Feb. 26th, at Florence, Alexander Robert Coldstream, M.D., F.R.C.S.E., in his 67th year.

HARTLEY.—On March 5th, at De Parys-avenue, Bedford, Arthur Conning Hartley, T.D., M.D., O.M., F.R.C.S., aged 54 years.

POLLOCK.—On March 7th, at Penton Lodge, Mill Hill-park, W., Rowland Pollock, L.B.C.P.I., L.M., L.R.C.S.I.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE examinations for the Diploma in Psychological Medicine are now being resumed by the University of Cambridge. It is the aim of the managing committee for this diploma to make its acquirement a habit among psychiatrists in the same way as a public health diploma is part of the equipment of the sanitarian.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.
Tuesday, March 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

Wednesday March 19th.

SOCIAL EVENING: at 8.30 P.M.
Mr. Walter G. Spencer will discourse on "Larrey and War Surgery."

MEETINGS OF SECTIONS.

Wednesday, March 19th.

HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.

Papers:

Dr. Ralph Leftwich: The Evidence of Disease in Shakespeare's Handwriting.

Rev. Father Fletcher: The Medical Book of St. Isidore.

Thursday, March 20th.

DERMATOLOGY (Hon. Secretary—S. E. Dore): at 4.30 P.M.

Cases:

Dr. Graham Little: (1) Multiple Neuromata of Skin; (2) Dermum's Disease; (3) ? Section of Mycosis Fungoides.

Dr. Barber: (1) Case for Diagnosis; (2) Granulosis Rubra Nasi; (3) Alopecia of the Scalp and Eyebrows associated with Graves' Disease.

Dr. George Pernet: (1) Arrested Development of Hair in a Girl; (2) Unilateral Band Scleroderma; (3) Melanotic Nævo-carcinoma (previously shown).

Dr. S. E. Dore: Case for Diagnosis.

Friday, March 21st.

OTOLOGY (Hon. Secretaries—J. F. O'Malley, H. Buckland Jones): at 5 P.M.

Demonstration:

Sir Thomas Wrightson, Bart., and Prof. Arthur Keith: Demonstration on the New Theory of Hearing.

Specimens and Cases will be shown by:

Mr. Sydney Scott, Mr. Richard Lake, Mr. Stuart-Low, Dr. Watson Williams, Mr. Lawson Whale, and Mr. O'Malley.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Robert T. Knox, Walter J. Turrell): at 8 P.M.

JOINT MEETING with the INSTITUTION OF ELECTRICAL ENGINEERS.

The Discussion will be opened by papers by Mr. R. S. Whipple on "Some Notes of Electrical Methods of Measuring Body Temperature," and "Some Notes on the Electrocardiograph."

In addition there will be an Exhibition of X-Ray and Electrotherapeutic Apparatus.

Advance copies of the papers will be ready a few days before the meeting, and will be sent on application to the Secretary, Institution of Electrical Engineers, 1, Albemarle-street, W.1.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

ROYAL METEOROLOGICAL SOCIETY, at the Lecture Room of the Geological Society, Burlington House, Piccadilly, W.

WEDNESDAY, March 19th.—5 P.M., Lecture:—Prof. L. Hill: Atmospheric Conditions which Affect Health.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.1.

WEDNESDAY, March 19th.—8 P.M., Dr. J. B. Gatenby: An Account of Work on Cytoplasmic Inclusions of the Cell.—Lieut.-Col. J. Clibborn, C.I.E.: A Standard Microscope.—Dr. N. Mutch: A Simple Method for the Isolation of Single Bacteria for the Preparation of Pure Cultures (Demonstration).

CHILD-STUDY SOCIETY LONDON, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY, March 20th.—6 P.M., Discussion on Training of the School Girl in Infant Care (opened by Mrs. K. Truelove).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY, March 18th, and THURSDAY.—5 P.M., Milroy Lectures:—Dr. J. C. McVail: Half a Century of Small-Pox and Vaccination.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Special Eight Weeks' Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

LONDON HOSPITAL MEDICAL COLLEGE.

A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—

MONDAY, March 17th.—1 P.M., Lecture VII.—Gastric Ulcer; Etiology and Pathology.

FRIDAY.—10 A.M., Lecture VIII.—Gastric Ulcer; Symptoms, General and Special.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.

A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).

WEDNESDAY, March 19th.—5 P.M., Lecture V.: Dr. L. S. Dudgeon: Blackwater Fever.

FRIDAY.—5 P.M., Lecture VI.:—Dr. L. S. Dudgeon: Bacillary and Amebic Dysentery.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY, March 18th.—3 P.M., Lecture II.:—Prof. A. Keith: British Ethnology—The People of Scotland.

FRIDAY.—5.30 P.M., Prof. W. W. Watts: Fossil Landscapes.

Notes, Short Comments, and Answers to Correspondents.

A PICTORIAL SYMBOLISM OF REPRODUCTION.

THE puerile and primitive anthropomorphic attempts of the ancients to explain the origin and continuity of vegetable, animal, and human life in pre-Christian times are well known. The common concepts of a divine fusion of both sexes led, in Mesopotamian and in much of Hellenic mythology, to a pandemonium of eroticism and stories of impossible intercourse. When, as in Syria, and perhaps in some of the tableaux of the Greek mystery plays, the sexual subject of generation was mingled with religion gross indecencies were suggested and practised—in some Egyptian myths mankind was said to have been created from the spittle of Osiris, whilst in others it was accomplished by his masturbation. Isis also was said to have filled up again the depopulated Delta by a similar process.

The reproductive element in life was a mystery to these early races, although they knew sufficient about the sexual fertilisation of plants to take the male date palm pollen and shower it over the female flowers. But alongside much crude imaginings there was a somewhat better-thought-out and reasonable speculation as to the reproduction of life based on the knowledge then available. This explanation appears only to have been accepted by the Phœnicians, racially close allies of the Hebrews, and is to be found in fragmentary excerpts from Sanchuniathon and other Semitic sages.

It has been difficult clearly to comprehend the interpretation of reproduction which the wise Phœnicians professed to give, as we have only Greek translations of their writings; but a vivid light has been thrown upon what they intended to convey—and it confirms the



renderings the classics had given—by the discovery in Spain of a Phœnician picture, or tableau, setting forth their view pictorially. This relic forms the major part of a circular plaque, showing the sun, and stars at top, with a border of fish figures, indicating that the whole design depicts the Cosmos surrounded by water. Prominent in the foreground are two palm trees, male and female, and two serpents, the horned male beside the staminate male tree and the female snake with teats and bird wings near the pistillate palm. The heat of the earth is represented by a flame rising in the foreground, the solar heat being typified by the rayed sundisk. By this description it is clear that the tableau concerns nature's reproductive forces, the serpents being selected because of their reputation for copulative powers, the trees to illustrate the vegetable kingdom, and the solar heat and warmth of the soil as productive of vegetation. This knowledge guides us to the correct interpretation of the two central figures completing the picture, which are two deities of human form, the feminine form beside the female animal and tree, and the male one opposite. They are represented as producing life, both bodily and spiritual, from two sources of their

persons. The sperm from the male body, whom we may call Baal—if this is really Phœnician work—passes from him and enters and leaves again Tanith's body, flowing with a spiral motion, terminating in a figure of a human embryo. This spiral fluid is made up of animal corpuscles, and is nourished by a stream of milk flowing from Tanith's breasts. Her body is decently clothed in a skirt with zones of various figures, as we know was the case with Diana's robe at Ephesus. But a further form of vital interaction is represented by flying bodies passing between the open mouths of the two figures. These are alternately tiny winged creatures and circular objects, and evidently refer to the creation of the soul. The primitive words for breath and for the spirit were frequently the same, and the emblems for the soul often a butterfly, or some small winged creature. Archaeological evidence for the widespread prevalence of these concepts is forthcoming.

PHYSIOLOGY AND THE STUDY OF DISEASES.

AT King's College, London, on March 5th, Professor D. Noel Paton delivered a lecture on Physiology and the Study of Diseases, being the fifth of the series of lectures on Physiology and National Needs. Physiology, he said, was the basis of the study of disease, for disease was simply normal physiological action gone wrong. It was the duty of the physician to discover what the fault was and why it had occurred. Until he had investigated these two points any rational treatment was hopeless. To study disease without this constant reference to normal physiological conditions was one of the greatest mistakes which had been made in the past. There was a tendency to group symptoms together without an adequate consideration of their significance in terms of normal physiological action, or of their mode of production. It followed as a result that too often treatment was based upon the authority of others without considering how the patient would be benefited. This opened the door to credulity and credulity ought not to enter into medicine. It was hardly realised how empirical medical treatment was even at the present day. It was impossible to cure disease when structural changes had developed. Slight divergences from the normal physiological action, resulting in the first stages of real disease, were too often ignored. The naming of diseases had perhaps obstructed advance in medicine. If a child's head were enlarged by an accumulation of fluid some might be content with a diagnosis of hydrocephalus without considering why the fluid was there. The student too often studied physiology as a means of passing certain examinations rather than as a preparation for the study of disease. He required to be shown how scientific methods could be carried into practice at the bedside. For example, physiological methods had been applied to the study of disease, in the investigations which had been carried out on gassing and wound shock, and on tetany, in which the action of the parathyroid glands was involved. There was a strong tendency at present to place utility in the forefront, but experience had shown that the most important advances in the application of science to medicine had been based upon investigations which primarily seemed to have no direct bearing on benefits to humanity. A knowledge of osmotic pressure, viscosity, and colloids, which had been studied without any reference to remedial measures, had proved of great value in initiating various forms of treatment. The real scientist found his greatest joy in overcoming difficulties. The general public must realise that knowledge gave us power to fight with more success against the adverse forces of life, and that consequently facilities should be given to those who sought to obtain knowledge.

"Ignorance is the curse of God,
Knowledge the wing wherewith we fly to heaven."

Sir George Newman, who presided, considered the neglect of physiology in our schools and colleges throughout the country to be one of the principal causes of the large amount of disease and disablement which was found among the school children of England and Wales. The fact that 10 per cent. of them were suffering from an avoidable degree of malnutrition which prevented them from taking full advantage of their educational facilities, and that about 20 to 30 per cent. failed to see with their eyes what they might see if the teachings of physiology had been understood, showed the enormous loss to the country which resulted from a failure to put physiological laws into practice. A study of fatigue and disablement had shown that the same neglect of adolescent and adult life had led to a reduction of output in munition factories at the maximum cost to the life and strength of the worker. Wages and social conditions were important, but it was still more the right understanding and right practice of the principles of physiology which secured a maximum output. We had established in England, he said, a great school of physiology, but it was one of the defects of English medicine that we failed to carry the principles discovered and taught into the daily practice of medicine at the

bedside and in the ward. Until English physiology entered into its kingdom in English medicine we should not reap the full harvest which was ours by right as the result of the work of English physiologists. In his Government work he had met precisely the same problems. In the schools, the workshops, and the universities we were in greater need of a right understanding and right practice of the principles of physiology than of almost anything else.

SPHAGNUM MOSS.

THE secretary of the Devon Sphagnum Moss Central Depot reports that since the spring of 1915 up to the present time 830,520 moss dressings had been forwarded to 165 base hospitals, casualty clearing stations, &c.

OSTEO-ARTHRITIS.

To the Editor of THE LANCET.

SIR,—Can any of your readers suggest a remedy for a case of osteo-arthritis in right hip-joint of a practitioner aged 50 years, otherwise healthy? Teeth sound. Pain is not troublesome during the day, but is getting severe at night for the past month or so. Any suggestions as to treatment will be gratefully received.

I am, Sir, yours faithfully,

ARTHRITIS.

THE MOSQUITO PROBLEM IN BRITAIN.

THE possible danger from the importation of malaria in this country is emphasised by the Order of the Local Government Board making that disease notifiable, and the question arises as to how far the methods of fighting the anopheline mosquitoes adopted in the tropics are practicable in the British Isles. In the January issue of the *Royal Army Medical Corps Journal* Captain Allan C. Parsons and Lance-Corporal G. R. Brook, of the same corps, contribute a joint paper containing suggestions for a winter campaign in this country against the mosquito, pointing out that the conditions, political, physical, and social, existing at home in regard to the mosquito problem are altogether different from those of the tropics. Their method, based on the seasonal habits of mosquitoes, which they describe in detail, consists in catching or destroying the insect, some species of which pass the winter in the adult stage and some in the larval stage, by means of swatting, flares or blow-lamps, electrocution, and fumigation. Of these last-mentioned agents the general use of hydrocyanic acid, chloroform, and chlorine on a large scale is not recommended on account of the danger involved in their employment, though it is pointed out that chlorine is a very powerful insecticide and might be used with good results at small cost at stations where the services of gas officers are available. Where a safe domestic remedy is required the authors recommend campho-phenique and the various cresylic compounds.

THE FACTORY MEDICAL OFFICER IN WAR AND PEACE.

Dr. W. J. O'Donovan, chief medical officer of the Welfare and Health Section of the Ministry of Munitions, delivered a lecture at the Royal Institute of Public Health on March 5th on the War-time Experience of Factory Medical Officers and the Position of Factory Medicine under Peace Conditions. Lord Chetwynd, who presided, said that in a factory with which he was connected medical supervision had proved itself of benefit not only to the operators, but to the administrative side of the work, both the amount and quality of production being increased when the health and physical needs of the workers were properly attended to. Women workers, as a rule, did not feed themselves properly and, as a consequence, often suffered from fainting attacks; at one time in his factory as many as 50 to 60 cases would occur in a day, which meant the stoppage both of the patient's work and that of those who attended to her. When the women were properly fed fainting fits became rare. About 9000 people were employed, of whom 3000 were women, and for these a staff consisting of two doctors, one dentist, and four trained nurses was not too large. By keeping the workers cheerful, preventing monotony in their work, and by providing recreation and a complete change during meal-times, casualties were reduced enormously, the money saved on better production amply providing for such supervision.

Dr. O'Donovan said that the beginning of the war found the country unprepared to deal with the needs of industrial medicine, and the problem became acute when T.N.T. was first handled in bulk. Industrial health in this connexion was more important than the recognition and treatment of disease. The medical officer of the factory admitted the employees, selected those best suited for the work which was being carried on, and supervised all the working conditions. He was the friend and consultant of everyone within the factory gates, and often saved much anxiety by solving difficult problems which presented themselves to the management. Knowing the conditions under which the worker was

employed, the factory officer was in a position to understand the nature of the illnesses of workers better than could the outside doctor, who might quite easily be imposed upon by the patient, and where sick benefit was concerned he thus saved money to the country. It was necessary that he should be a member of the factory staff. Sickness among the workers might be caused by drink, industrial occupation, or illness, but before the occurrence of disease the effects of fatigue might make themselves felt, and this could only be properly dealt with by the factory officer who knew the conditions of work. It had been said that the lawyer took a broad outlook upon life, whilst the doctor was a pure individualist. If medicine was to progress the community must be regarded as a whole, and it was in industrial medicine that the medical profession would find its best recognition. In the future we should be guided by our war experiences, which showed that success could be assured by a combination of methods. There was a peripheral medical staff in each industrial area, a headquarters medical staff travelling from centre to centre, and a headquarters medical staff whose members could remain in any area over a long period when necessity arose. Every case of difficulty was carefully considered, whilst co-ordination of research had been most fruitful in its results. It was, however, important that the findings of research should be adapted to industrial conditions in the factory.

Factory medical officers, he continued, being disbanded, employment was passing from the State to private management, and the services of the certifying surgeon would again have to be relied upon; but his duties were so multifarious that any practical work on industrial conditions was impossible. Pathologists should be appointed whose main duty would be to inquire into industrial deaths, for if clinical industrial medicine was to be put on a sure foundation it must be supplemented by observation in the post-mortem room. Whilst there were chairs in all departments of medicine in our universities, there were none which had for their object the maintenance of industrial health, though there was an increasing demand for skilled industrial physicians. The factory doctor must be assisted by the factory nurse and the factory dentist. To a large extent health depended upon the state of the month, but the working hours of the registered dentist were never available to the working-class patient, the quack only being regularly a worker in the evening. For this reason facilities should be given for the employment of a factory dentist. The same applied to the doctor. As a rule the worker could only see the general practitioner either when he was ill in bed, or in the evening when both he and the doctor were tired, and the surgery was perhaps crowded. It should be the privilege of every worker to see his medical attendant in the daylight.

A SIMPLE AID IN REDUCING PARAPHIMOSIS.

To the Editor of THE LANCET.

SIR,—Paraphimosis, whether secondary to inflammatory changes in the adult or to manipulations in children, is common in general practice and very common in urogenital clinics, but when one looks up the literature as to the treatment of this painful condition all authors suggest a similar mode of procedure as to its reduction—namely, to grasp the oedematous portion of the penis between the index and middle fingers of both hands, making traction forwards, while the thumbs press the glans backwards. The process is painful, the operation often fails, especially in old-standing cases, and then operative measures are necessary.

By the simple means of puncturing the oedematous tissue, and so draining the waterlogged tissue, I have been successful in reducing the most severe cases practically painlessly. The skin is sterilised in the usual way or by painting with iodine; a few stabs are made in the swollen tissue with a needle sterilised by passing through the flame of a spirit lamp or bunsen burner. Gentle pressure is made and the oedematous fluid will ooze from the punctures. The prepuce can then be easily drawn over the shrunken tissues. I have never had any complications following, but the precaution must be taken to give the patient some antiseptic lotion to wash out the preputial sac.

If practitioners will adopt this simple plan I am certain very few cases will be seen in out-patient departments of hospitals or in the private consulting-rooms of specialists.

I am, Sir, yours faithfully,
Manchester, Feb. 25th, 1919. M. W. BROWDY, M.B. Glasg.

F. H. M.—We presume that varix of the common femoral vein is referred to. Varix of deep veins is extremely rare, and we know of no recorded case of a dilated femoral vein being mistaken for femoral hernia. Varicosity of the saphenous vein as it passes through the saphenous opening is not rare and has been mistaken for femoral hernia. If it is desirable to interfere at all, the dilated portion of the saphenous vein may be tied and excised, asepsis being

observed, and special care being taken while tying the smaller vessel at its point of entry into the larger to avoid the production of a thrombus protruding into the common femoral vein. Should varicosity of the femoral vein be present ligature should not be tried, as nearly all the blood from the lower limb returns by this vein, and its ligature would almost certainly be followed by great oedema of the leg and probably by gangrene. Nothing more can be done than to give the dilated vein the support of a bandage.

Communications, Letters, &c., to the Editor have been received from—

- A.—Association of Panel Committees, Lond.; Sec. of: Association for Promoting the Training and Supply of Midwives, Lond.; Messrs. Allen and Hanburys, Lond.; Dr. A. J. Anderson, Cape-town; Dr. F. E. Appleyard, Salisbury, Rhodesia; Association of Certifying Factory Surgeons, Manchester, Sec. of.
B.—Mr. W. G. Ball, Lond.; British Medical Association, Marylebone Division; Miss L. M. Brooks, Lond.; Messrs. P. Blakiston's Son and Co., Philadelphia; Board of Agriculture and Fisheries, Lond.; Board of Agriculture and Ministry of Food, Joint Committee of Lond.; Dr. A. C. Begg, Swansea; Dr. F. W. Broderick, Bournemouth.
C.—Mr. B. Cridland, Wolverhampton; Mr. E. M. Corner, Lond.; Capt. W. E. Cooke, R.A.M.C.; Dr. E. A. Constable, Lond.; Mr. G. W. F. Clark, Plymouth.
D.—Dr. L. Drage, Hatfield; Mr. R. Davies, Lond.; Dr. J. R. Day, Lond.; Messrs. A. and F. Denny, Lond.; Dr. A. F. Dixon, Dublin.
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F.—Capt J. G. Forbes, R.A.M.C.; The Field, Lond.; Faculty of Insurance, Lond.; Sec. of: Factories, Chief Inspector of, Lond.
G.—Dr. S. R. Gloyne, Lond.; Mr. S. H. Gill, Birkdale.
H.—Dr. J. A. B. Hicks, Lond.; Prof. W. Hall, Bristol; Dr. C. W. Hutt, Brighton; Dr. B. Hicks, Lond.
I.—Institution of Electrical Engineers, Lond.
J.—Journal of Bacteriology, Baltimore.
K.—Dr. C. Kidd, Bromsgrove.
L.—Sir J. Lynn-Thomas, Cardiff; Dr. A. Lewers, Melbourne; Dr. R. B. Low, Lond.; Dr. C. E. Lakin, Lond.
M.—Dr. H. A. Macewen, Lond.; Dr. H. Mackenzie, Lond.; Lieut. Col. C. S. Myers, R.A.M.C.; Mr. C. MacMahon, Lond.; Dr. F. H. Maberly, Crosshaven; Dr. E. Mellanby, Lond.
N.—Mr. R. Nairn Hastings, N.Z.
O.—Oliver-Pell Electric and Manufacturing Co., Lond.
P.—Dr. F. R. Parakh, Bombay; Dr. E. H. Paramore, Rugby; Mr. R. H. A. Plimmer, Lond.; Dr. R. M. F. Picken, Glasgow; Major J. Parkinson, R.A.M.C.; Capt. B. T. Parsons-Smith, R.A.M.C.
R.—Royal National Hospital for Consumption, Lond.; Sec. of: Royal Institution, Lond.; Royal Sanitary Institute, Lond.; Royal Meteorological Society, Lond.; Dr. W. Russell, Edinburgh; Royal College of Physicians of Edinburgh and Royal College of Surgeons of Edinburgh, Presidents of: Royal Society, Lond.; Royal Society of Arts, Lond.
S.—Mr. R. E. Smith, Exeter; Mr. Shepherd, Lond.; "S. R."; Dr. F. K. Smith, Aberdeen; Mr. E. A. Stoney, Dublin; Dr. J. Searson, Lond.; Lieut. V. G. Sanders, A.I.F.
T.—Tuberculosis Society, Lond.; Col. A. H. Tubby, C.B.E., C.M.G., A.M.S.; Dr. W. W. C. Toppley, Lond.; Major G. Taylor, R.A.M.C.; Mr. P. N. Turner, Lond.; Mr. G. Taylor, Lond.
U.—University College, Lond., Provost of.
V.—Mr. A. L. Vischer, Bale; Mr. R. M. Vick, Lond.; Major P. N. Vellacott, R.A.M.C.
W.—Mr. W. N. White, Lond.; Surg.-Lieut. F. A. Williamson, R.N.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

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Milroy Lectures

[IN ABRIDGED FORM].

ON

HALF A CENTURY OF SMALL-POX AND VACCINATION.

Delivered before the Royal College of Physicians of London on March 13th, 18th, and 20th, 1919.

By JOHN C. McVAIL, M.D., LL.D.

THE lecturer began on a personal note. It was just 50 years since he had entered on the study of medicine, and the pandemic of small-pox reached Glasgow in 1871. Students had opportunities of seeing the disease at the Royal Infirmary until infection spread to the wards and cases were excluded. In 1873-74 small-pox reached Kilmarnock, where the lecturer had begun practice, and the whole epidemic was witnessed. Afterwards a local register of mortality of the eighteenth century came into his hand, showing the ravages of small-pox at that time. Publication of the facts led to further discussion, and lengthy evidence was given before the Royal Commission on Vaccination. Subsequently, as medical officer of health for Kilmarnock and afterwards for the counties of Stirling and Dumbarton, various opportunities had come to him for dealing with the disease from the preventive and administrative side, and now at the end of half a century his thanks were due to the Royal College of Physicians of London for giving him the opportunity of summing up the opinions or conclusions which had formed themselves in his mind.

The subject would be treated in three sections:—

1. Small-pox as it was and is.
2. Vaccination as it was and is.
3. Control of small-pox in the present day.

SMALL-POX AS IT WAS AND IS.

This was considered in respect of: (a) fatality; (b) infectivity; and (c) prevalence.

Fatality.

It had always been recognised that small-pox differed greatly in its fatality or case mortality rates as between one time and another and one place and another. Previously to the passing of the Acts for the notification of infectious diseases fatality rates had to be obtained almost wholly from the records of hospitals, and prior to 1870 practically the only institution of this kind in this country was the London Hospital for Small-pox and Vaccination. By the end of 1870 the first of the institutions of the Metropolitan Asylums Board was used for small-pox and other hospital data became available.

The gross fatality rates of small-pox, including both unvaccinated and vaccinated, had been in 1836-51 21·38 per cent., and in the pandemic of the "seventies" about 18 per cent.—in Dublin about 21 per cent. The next extensive epidemic was in 1892-95, but intermediately two local epidemics occurred—one in Sheffield having a fatality rate of 10·1 per cent., and a similar one in Bristol of 11·3 per cent. The epidemic of 1892-95 was extensive, and its fatality rate in the M. A. B. Hospitals was 8 per cent. In 28 populations in the provinces, Scotland, and Dublin the fatality rate was 8·5 per cent. The same general type of disease had therefore prevailed throughout the country as a whole, and small-pox was much less fatal than it had been in the pandemic of the "seventies." The next extensive epidemic was that of 1902-05, and an important distinction emerged between London and the rest of the country. In London the fatality rate reverted practically to the high figures of the outbreaks previous to 1892-95, as the following series of rates shows:—

| | | | | | |
|---------|---------|---------|---------|---------|---------|
| 1870-72 | 1876-78 | 1879-83 | 1884-85 | 1892-93 | 1901-02 |
| 18·8 | 18·2 | 16·5 | 15·9 | 8·0 | 16·8 |

In the provinces, instead of reversion to a higher rate, there was a still further diminution in fatality. In the years 1902-06 inclusive, in areas for which returns had been obtained by the Local Government Board, 23,883 cases had 1649 deaths, or 6·9 per cent. In many places the rates ranged round 3 per cent., 4 per cent., and 5 per cent. This No. 4986

epidemic of the early years of the present century showed lower fatality than had been met with in small-pox since reliable statistics on any extensive scale had become available. The statistics did no more than support clinical observation of the change that had taken place in small-pox. Every physician whose experience went back far enough had seen with his own eyes the contrast between past and present. To some extent comparison of fatality rates was affected by the systematic contact hunting which now brings to light many slight cases, and at the same time contact hunting results in many cases being vaccinated during incubation and just too late for complete protection but with much modification of the disease. Making allowance for these considerations the diminution in fatality was quite unquestionably very great.

The simultaneous appearance of two types of infection, one in London and the other in the provinces, raised the important question of the source of the two varieties. Available facts indicate that the London small-pox had come from France, especially from Paris. Spain, France, and Italy, all with a Mediterranean littoral, were continually liable to infection from North Africa, where small-pox was habitually severe. In Paris in 1900-01 there were 4505 cases with 758 deaths, or 16·8 per cent. This happens to be exactly the London fatality rate of the same period, and Sir Shirley Murphy in his Report to the London County Council for 1902 wrote: "In summary it may be stated that during 1900 and 1901 small-pox had been frequently introduced into London from abroad, especially from Paris."

Of the mild type which prevailed in the provinces the source was to be found in the New World. In America the disease had prevailed in a very remarkably attenuated form. In Trinidad in 1902-03 there were 5256 reported cases with only 28 deaths, or 0·53 per cent. In the United States very mild small-pox had prevailed for many years, percentage fatalities on a very large basis of facts being 2·3 per cent. in 1901, 3·7 per cent. in 1902 and 3·4 in 1903. Dr. Boobbyer, of Nottingham, in *The Lancet* and *British Medical Journal* in 1901 related how small-pox had been introduced into Nottingham by means of a Mormon conference, and the disease had been communicated to various towns in England. Similarly, Mormon activities had been asserted to be responsible for New Zealand small-pox in 1913-14. The fatality rates above mentioned have been even further diminished since 1901-03. Dr. Bruce Low's recent report to the Local Government Board contains a most valuable collection of statistics relating to small-pox throughout the world, and many of the figures submitted by the lecturer were based on that report. New South Wales had also shared in the mild American type. In 1913-14 it had only two deaths in 1661 cases, and infection was supposed to have been imported from Vancouver.

Intercurrently, however, there had been various outbreaks of comparatively high severity in New York, in Canada, and in our own country, as in Hull in 1899-1900, where the disease had been introduced apparently from Southern Russia. Dr. Franklin Parsons had related that in one town in Lancashire there were outbreaks from the two sources concurrently, one mild from America and the other severe from Paris via London. The change from severe to mild had occurred on the whole somewhat suddenly, the epidemic of the early "nineties" being the first of the mild type on any extensive scale. To the question whether the two diseases were both really variolous or differed from each other as typhoid and paratyphoid differ, vaccination seemed to supply the answer. It prevents the mild type just as it prevents the severe, and Chapin had said: "The crucial test of the identity of the two forms is, however, to be found in their immunity relation. Persons who have had small-pox or who have been successfully vaccinated are at least as immune to the mild as to the severe type." At first the mild type was naturally regarded as a "sport," but if it were to displace throughout the civilised world the severe type, then by and by the latter would have to be regarded as the "sport."

The conditions under which small-pox assumed high virulence in one part of the world at one time and attenuation in another part at another time were well worthy of study, say by the Medical Research Committee.

The fatality of natural small-pox was discussed in connexion with the statistics of the eighteenth century,

when there was no vaccination, and with the fatality rates of the disease amongst the unvaccinated since the beginning of the nineteenth century. Reservations, however, had to be made in respect of age-incidence because small-pox was very fatal in infancy, reached its lowest natural fatality in the third quinquennium of life, and rose again in adult life. Epidemics occurring at different intervals would include different numbers of cases at the several groups of ages, and were not, therefore, always strictly comparable. Also, in the eighteenth century, chicken-pox may sometimes have been confused with small-pox. Such reservations apply to the earliest available figures, those of Dr. Jurin of the Royal Society in the period 1720-30, when the fatality rate was stated at about 16 or 17 per cent. Bearing them in mind, however, for what they were worth, the next available figures were those of the London Small-pox Hospital, where from 1746 to 1763 the fatality rate was over 25 per cent. and in the last quarter of the eighteenth century it had risen to over 32 per cent. Small-pox was, therefore, becoming a more severe disease throughout the eighteenth century. In the nineteenth century among the unvaccinated there had been in the early years a further rise, the period 1836-51 having a hospital fatality rate among the unvaccinated of 37.5 per cent., though at that time the severer cases were often sent to hospital and some proportion of milder cases might be kept at home. In the epidemic year 1838 the unvaccinated rate was 40.1 per cent., but the reservation just mentioned has to be borne in mind. In the epidemic of 1870-73 the Metropolitan Asylums Board Hospitals had an unvaccinated fatality rate of 44.8 per cent., say 45 per cent. This appeared to indicate the maximum virulence in respect of epidemic fatality which small-pox has reached in this country during the past 200 years. It is not merely statistics which justify this view. Dr. Munk and Mr. Marson, the medical officers to the London Small-pox Hospital, which was then still in use, referred to the malignancy of the disease as being very largely in excess of anything within their experience, and Dr. Seaton, reporting to the Local Government Board, wrote similarly. During the half century which is nearly completed since the epidemic of 1870-73 there has been, with the exception of London in 1901-02, great and practically continuous diminution in the fatality of natural small-pox in this country. In 1873-84 the metropolitan hospitals' unvaccinated fatality rate fell to 38.6 per cent., and in 1892-93 the London rate was 24.2 per cent. In 1892-95 a large number of populous places had amongst them 2349 unvaccinated cases, with 602 deaths, or 25.2 per cent., practically the same as in London. In the most recent epidemic, that of the early years of the present century, it had already been pointed out that the London area suffered from the African type of small-pox, and the fatality rate among the unvaccinated was 33.1 per cent. In the provinces, however, in fully a thousand unvaccinated cases the rate was 19.3 per cent. Subject to the reservations previously noted, this would indicate that the wave of fatality which for want of earlier data has been taken as beginning in 1720, kept on increasing until the pandemic of 1871-72, and since that time has been decreasing. Subsequent to the epidemic of 1901-05 there has been little prevalence of the disease, but such figures as exist, broadly looked at, continue to point in the same direction. The diminution depended largely, though not entirely, on the substitution of the American type for the African type.

Infectivity.

Two factors go to make up infectivity—one the quality of the infection and the other the quantity. Bacteriology had not yet conclusively identified the organism of small-pox, but observation showed that in respect of the quality of its infection it has more resemblance to scarlet fever and diphtheria than to measles and whooping-cough. In measles there are practically no sporadic cases. A single case means an epidemic. Whooping-cough tends in the same direction. In scarlet fever, on the other hand, sporadic cases, not necessarily portending an epidemic, are frequent. In diphtheria Dr. D. S. Davies of Bristol found that change from the sporadic to the epidemic type of the disease was accompanied by definite change in the characters of the organism. In small-pox "sporadic" cases in inter-epidemic periods are not uncommon. Epidemics sometimes begin very slowly, but sometimes break out very suddenly. London in 1901 and

Gloucester in 1895-96 are examples of a slow onset. On the other hand, Edinburgh in 1903-04 had a rapid onset of its epidemic.

Leaving quality and dealing with quantity, the amount of the eruption, both cutaneous and buccal, is, broadly speaking, the measure of infectivity. But the amount of eruption is also related to the fatality rate. It has steadily diminished. So also has the average amount of eruption, and so again the infectivity. Small-pox, therefore, has been in recent years a much less infectious disease than half a century ago.

Prevalence.

As to prevalence, fatality and infectivity being reduced, it follows that other things being equal prevalence must also have diminished, and Dr. Bruce Low's Report gives abundant evidence of the fact. In England and Wales the deaths have remarkably diminished. In five successive decades they have been—

| 1867-76 | 1877-86 | 1887-96 | 1897-1906 | 1907-16 |
|---------|---------|---------|-----------|---------|
| 58,814 | 18,026 | 4,892 | 4763 | 139 |

The notifications since 1911 have been very few, and in 1917 the extraordinarily low figure was reached of 5 cases for the whole of England and Wales, 2 of the 5 being in port towns. In Edinburgh and Glasgow, in the five years 1912-16 inclusive, there was not a single notification, and in the 12 years 1905-16 the two cities had only 37 cases with 1 death. In Ireland, in the 12 years 1906-17, there has been 1 death. The Scandinavian countries have shared in this remarkable absence of small-pox, and so also has Holland, but in several European countries—France, Spain, Portugal, Italy, and Russia—there has been no such disappearance of the disease. In Britain, however, during the last half-century there has been, with the exception of the metropolitan epidemic of 1901-02, a fairly steady diminution in the fatality, the infectivity, and the prevalence of small-pox. This diminution has progressed at an increasing rate of speed, and since the mild epidemic of 1901-05 the country has shown an unparalleled degree of freedom from the disease.

LECTURE II.

VACCINATION AS IT WAS AND IS.

Neither infantile vaccination nor revaccination has ever been really compulsory in the United Kingdom. The utmost penalty has been the infliction of fines, and non-payment of a fine has sometimes involved imprisonment, but the law has never allowed a child to be taken out of its mother's arms and forcibly vaccinated.

In 1898 an exemption clause for objectors was enacted. Procedure for exemption was made easier in 1907. Domiciliary vaccination has been, to a great extent, substituted for vaccination at public stations since 1898. The age for obligatory vaccination has been raised in England from 3 months to 6 months, as in Scotland. Revaccination is entirely voluntary in both countries. The practice of infantile vaccination has greatly diminished, owing partly to the remarkable absence of small-pox, and partly to the provision for exemption. In England in 1912 only about half the infants born were being vaccinated, and no doubt there has been further diminution since then. In Scotland in 1916 the percentage of infants remaining unvaccinated was 41.

The doctrine of vaccination has altered in respect of increased recognition of the need for revaccination, and the value of recent vaccination when the disease prevails. Opinion as to the proper age for systematic revaccination has changed in the direction of earlier repetition, 9 or 10 years being substituted for adolescence, especially in presence of small-pox, and when there is appreciable risk of infection vaccination should again be repeated.

In Germany up till the beginning of the war such few cases of small-pox as had occurred were largely on the frontiers of the Empire, which were subject to infection from Russia or other ill-vaccinated countries. The internment of two or three millions of Russian prisoners during the war has permeated Germany to an unparalleled degree, and in Berlin in 1917 there were about 4000 cases of small-pox with 400 deaths. Previous to the war the general standard of vaccinal protection was so high that the section of the population which was drifting towards return of susceptibility was largely protected from exposure to infection, but the

war has changed that. The male population of Germany, in so far as it serves in the army, had received the protection of a second revaccination on joining the forces, while the rest of the population has had a single revaccination. Probably most of the recent small-pox has occurred in the latter section. As in this country the civil population of Germany was never subject to forcible vaccination or revaccination. The highest penalty was by money fine or three days' imprisonment, but vaccination and revaccination have been on the same legislative footing, and the population has been well-drilled in obedience to the law.

Calf lymph.—The substitution of glycerinated calf lymph for humanised lymph has been of great value, not merely in relieving parental anxiety, but in making it possible on the shortest notice to provide vaccine lymph to meet the most extensive epidemic. In the pandemic of the early "seventies," not nearly enough lymph could be obtained from the children presented weekly for vaccination to meet the necessities of the general population requiring protection. The Local Government Board is now understood to store lymph to the extent of half a million tubes.

Diminution of infantile vaccination has to some degree been balanced by the increase in revaccination, and the war will have added greatly to the protection of the male adult population, but on the whole the country is distinctly less protected by vaccination than it was even 20 years ago.

Infantile vaccination and the spread of small-pox.—It had been argued in recent years by Dr. C. Killick Millard that while recent vaccination can be thoroughly relied on to protect the individual, infantile vaccination is on balance disadvantageous because it often makes subsequent small-pox so mild as to be unrecognisable, with consequent spread of infection by missed cases. The lecturer did not agree with this view. It would surely be wrong to refrain from protecting one individual against severe or fatal small-pox in order that other individuals, adults or children, should escape the result of omission by themselves or by their parents to secure a safety which is open to all. It was unquestionable that modification, as well as prevention, of small-pox was one of the results of vaccination, and, indeed, was claimed as one of its virtues. It was true also that an eruption of 10 pustules would be more readily overlooked than an eruption of 100 or 1000 pustules, but it must never be forgotten that the quantity of inherent infectivity was correspondingly less—was only a tenth or a hundredth. While a medical officer reporting on small-pox might naturally think of mild cases only as increasing his difficulties in the way of diagnosis, he ought to bear in mind that small-pox is not by any means always recognised in its early stages even if it is severe, and that a single missed case of high infectivity—say, in a vagrant—may make all the difference in the spread of infection. Also, non-notification was sometimes due to concealment, and a mild concealed case would be much less dangerous than a severe concealed case.

The epidemics of 1892-95 and 1902-05 had been so mild that independently of vaccination the difficulty of diagnosis was greater than ever before, so that missed cases were often referred to in medical officers' reports. But easy diagnosis could be obtained at too great a cost. If a missed case is naturally mild it will tend to spread a modified disease. If it is artificially mild there will be reversion to the natural type, and if it be mild the difficulty of diagnosis will correspond. If, on the other hand, it be severe, the desired facility of diagnosis will be achieved in the first group, but at the cost of a heavy attack with disfigurement or even death as a frequent result. Sometimes a mild case does cause considerable spread of infection, but in other instances various medical officers had recorded their surprise at the remarkable absence of infection. So far as mild cases did spread the disease, it was mainly by indoor infection. Outside, in the streets of a town, they seemed to do little harm. The lecturer gave various examples in support of this view—in Bristol, Derby, Halifax, Dundee, Sydney, Dunbartonshire, and Stirlingshire. In the metropolitan area the type in the epidemic of the early "nineties" was mild, while in 1902-05 it was severe. In the latter period public health organisation was better developed, and with the severe, and therefore easily diagnosed, type of the disease the cases, according to the thesis under discussion, should have been much fewer than in the mild epidemic of 1891-92, with its difficult diagnosis and its inferior protective organisation.

But, in fact, the very opposite had been the case. There was much larger prevalence in 1901-02 than in 1892-93. Possibly, however, other unknown factors were at work. The very mild small-pox of America, notwithstanding the constant traffic across the Atlantic (the journey taking less than the incubation period of the disease), had not resulted in any epidemic in this country since 1902-05. The similar mild type in Sydney in 1913 had been carried into 27 country towns or districts, but the total diagnosed cases in all these amounted only to 52. Gloucester's epidemic of 1895-96 was severe, and therefore easily diagnosable, but Gloucester would have been much better if its population had had the benefit of systematic vaccination in infancy. Spread of scarlet fever through unrecognised cases furnished a false analogy. The infection of scarlet fever was now believed to be much more from the throat than from the skin, and there might be a scarlatinal throat with practically no skin eruption. The analogy of small-pox inoculation was also unsound. Inoculated variola was an infectious disease, vaccinia is not.

The effect on the condition of the community of the discontinuance of infantile vaccination had to be borne in mind. Under exposure to small-pox the proportion of vaccinated persons infected is much less than of unvaccinated. For nine or ten years after infantile vaccination, especially if sufficiently performed, the individual has a large degree of immunity not only against death but also against attack, and the protection in diminishing degree continues much longer, especially against death. The fatality rate of small-pox in childhood is exceptionally high, but it is childhood which is specially protected by infantile vaccination, and children allowed to remain unvaccinated in the interests of easy diagnosis would be more likely to have a fatal attack than if the disease were deferred till later years. This would be part of the price of easier diagnosis.

There was, however, one conceivable condition which would not only justify, but demand, the cessation of vaccination. If small-pox were to disappear, so also manifestly would the need for vaccination, and the marvellous decrease of the disease since the close of the outbreak with which this century began makes such a possibility, however remote still, yet apparently less remote than ever before.

CONTROL OF SMALL-POX IN THE PRESENT DAY.

In discussing the control of small-pox in the present day it was necessary to take account alike of attack and of defence. As to the former, small-pox is a less fatal, a less infectious, and a less prevalent disease than it was half a century ago. The disease is not infectious in the incubation stage. Its infectivity is limited in the pre-eruptive stage and does not reach the maximum until vesiculation and pustulation. It is not conveyed by water-supply or drainage; milk epidemics are unknown; and there are no chronic carriers. Epidemics often begin slowly and allow an appreciable period for urgent preventive measures. The modern method of small-pox control consisted of the following items: Vaccination, compulsory notification, a sufficient public health staff, surveillance of contacts, isolation of cases, disinfection, local coöperation and central coördination.

Vaccination and revaccination claim the first place, and under the system of calf-lymph supply, material was very quickly available to meet any emergency. Also the vaccinal process runs a shorter course than the incubation stage of small-pox, and if the operation be performed within two or three days after infection vaccinia gets home first. Revaccination, however, may fail and adults engaged in manual labour may have some inflammation around the vesicles, though this can largely be guarded against. To enable a newly vaccinated workman to get a few days' rest many health authorities make a small money payment. The immunity obtained by recent vaccination is of the highest degree, as was strikingly exemplified in Glasgow in 1901-02.

Vagrants are a special source of danger and a constant difficulty against which legislation has not yet provided any sufficient remedy.

Notification.

Notwithstanding opposition various local authorities, by means of local Acts, began to obtain powers of compulsory notification from 1876 onwards. Under the adoptive Act of 1889 any local authority could obtain these powers, and the law became compulsory in 1899. Notification is of

essential importance. Fifty years ago the knowledge which came to the public health officer was casual and fragmentary. Now there is no disease which the medical practitioner is more certain to report than small-pox, whether actual or suspected. Diagnosis is essential to notification, and every opportunity should be taken of demonstrating the characters of the disease alike to students and practitioners. Action taken by the Royal College of Physicians in 1887 had resulted in the Metropolitan Asylums Board's hospitals being made available for education, and so also it is now in respect of small-pox hospitals throughout the country generally.

Public Health Staff.

Here there had been great improvement since 1870. At that date there was in Scotland only a single whole-time medical officer of health. Facilities for the study of disease prevention had immensely increased, and medical officers and sanitary inspectors were infinitely better acquainted with their duties now than half a century ago; also there were far more of them.

Surveillance of Contacts.

Surveillance of contacts was no doubt attempted in rudimentary fashion even in the epidemic of the "seventies," but there could be nothing in the least approaching thoroughness until notification became compulsory. The first period in which surveillance could be practised on any large scale was in the epidemic of 1892-95 by authorities who had adopted the Notification Act, and reports show that it was well carried out in many places. Investigation was required as to the source from which the first notified case had been infected, and also as to every contact, indoor and outdoor, the indoor contacts being under much greater risk of infection than the others. Contacts did not require to be seen daily during the incubation period, nor even to remain off work, until the critical days had arrived. There is at present no power to compel them to remain under conditions permitting regular observation, and in common lodging-houses it will often profit a health authority to make a small payment to induce contacts to remain.

Reception houses for individuals and for families are useful in large towns, but are much less necessary in the country.

School closure is a question of circumstances. The lecturer had never himself closed a school for small-pox. Contacts are naturally more difficult to supervise in the case of a migratory population, in the East-end of London, for example, as compared with the residential parts of the metropolis.

Isolation.

One of the earliest advocates of isolation as a supplement to vaccination was Sir James Y. Simpson in 1868. Simpson stated that Jenner's immortal discovery was saving from death probably 80,000 lives annually, but that about 5000 still died from the disease, and though better attention to vaccination would reduce this number, yet in the meantime the disease still revelled with fatal power. He proposed four regulations:—(1) Notification; (2) seclusion at home or in hospital; (3) the surrounding of the sick with nurses and attendants immune by cow-pox or small-pox; and (4) disinfection. He thought isolation might be conducted either at home or in hospital, and that the stage of infection of small-pox was not reached for some days after the eruption appeared. In this he was mistaken, but excepting that he made no mention of contacts, his scheme showed a characteristic grasp of essentials. Simpson's proposal had been put before the Royal Commission on Vaccination without any hint that he had made any reference whatever to vaccination, and the dissentient members of the Commission had not been aware of this, so that in their Statement they also made no reference to Simpson's views on vaccination. Their statement again had been relied on by Dr. Millard, and so the omission error was being perpetuated. Others, Dr. George Buchanan and his successor, Dr. Thorne Thorne, had also urged the value of isolation, which at that time was being denounced by antivaccinationists no less violently than vaccination itself. Nowadays, however, it is advocated by them almost as if it were a discovery of their own, and could be a substitute for vaccination. Small-pox hospitals would be needless if vaccination and revaccination were universal, and would be useless if there was no protected population from which a hospital staff and all connected with isolation

measures could be recruited. Hospitals at first, owing to their situation and management, had been centres of infection, but now they were themselves isolated as well as isolating their patients. The amount of accommodation required for any given community could not be specified beforehand, but there should be a sufficient administrative block and a sufficiency of ground to enable rapid extension. Their proper management involved many details which were dealt with in the lecture.

Occasionally, even yet, a local authority was without separate accommodation for small-pox, and in emergency the medical officer had to devote to small-pox a hospital for ordinary infectious disease. This could sometimes be done by setting apart for separate purposes the several hospitals in a given area. If, in the absence of any alternative, small-pox had to be treated in a pavilion in the same grounds with wards for other infectious diseases, the vaccinal condition of all patients had to be noted and such action taken as was required. Where a small-pox epidemic gets out of hand, as was the case in Gloucester, Dewsbury, and Middlesbrough, hospital isolation breaks down, and control has to depend solely on vaccination and revaccination.

Disinfection.

Disinfection in small-pox has to be very thorough, and in the case of bedding destruction is safer than disinfection, though the problem is difficult in a common lodging-house or navvies' hut, where the same individual may have used two or three beds in succession, or where the sleepers may change from night to night.

Local co-operation and central co-ordination must not be neglected. The medical officer should inform his colleagues in surrounding areas and should intimate the date of exposure of contacts, so as to guide action and save time. The Local Government Boards of England and Scotland require that every case be reported to them, and they intimate to such authorities as may be concerned. Also, they usually send an inspector to assist both in diagnosis and in administrative and preventive measures generally.

In illustration of the application of the modern method of control in rural areas an account was given of a small-pox outbreak among navvies during the construction of the West Highland railway in Dunbartonshire in 1892-93.

Leicester and small-pox.—No survey of the present-day control of small-pox would be complete without reference to what had come to be known as the Leicester method. In 1887 the lecturer had ventured on a prophecy as to what might befall Leicester under its method, and the prophecy had been repeatedly quoted, but always with omission of the fact that it was a conditional prophecy, the test stipulated being the recurrence of an epidemic like that of 1870-73. That test had never been applied. But as regards Leicester the essential facts were, that small-pox is not now in respect of fatality or infectivity or of prevalence the same virulent disease that it was formerly, that glycerinated calf lymph is now easily available for any amount of emergency vaccination, and that the Leicester method as expounded by its protagonists a quarter of a century ago differed in fundamentally important respects from the method now followed. In addition to the excellent practice of observation of contacts, which was creditable to the medical officers concerned from about 1877 onwards, it had been claimed for the Leicester method (1) that it was without recourse to vaccination; (2) that the whole method was voluntary; (3) that the same hospital was used for small-pox and all other infectious diseases at the same time; (4) that the same hospital was also used for the (voluntary) quarantining of contacts; and (5) that compensation for loss of time of contacts was not offered. Every one of the five items had been given up, though indeed as to the first, vaccination never had been entirely dispensed with, and the extent to which it was now used was indicated by the fact that in the last epidemic the medical officer had induced nearly 800 out of 1084 contacts living in infected houses to submit to vaccination.

As to compulsion it is unbelievable that the medical officer lets any patient fit for removal remain at home if the public is thereby endangered. The use of the same hospital for small-pox and all other infectious diseases was abandoned in 1892, and the quarantining of contacts at the hospital was given up in the following year. Compensation for loss of time is now declared to be one of the special

features of the method, while originally the declaration was just the opposite. It is not vaccination but the Leicester method in most of its features, which has been abandoned in Leicester. At the same time small-pox has become less fatal, less infectious, and less prevalent, and under these conditions Leicester had only 355 cases in the epidemic of 1892-93 and 715 in 1903-04, showing that with the mild type of small-pox which prevailed in the provinces in these two epidemics the modern method, which has taken the place of the Leicester method, can achieve some measure of success even where there is a large unvaccinated population, and where pressure towards recent vaccination is applied only to contacts.

The Leicester medical officer of health had in 1904 prudently made the reservation that perhaps Leicester had been lucky in having so mild a type of small-pox in its two epidemics. More recently he had scouted his own reservation as to luck. But in fact Leicester, just like the provinces in general, had been visited by mild small-pox of the American type. Leicester, however, had really been fortunate in respect of the skill, activity, and vigilance which had distinguished the work of Dr. Joseph Priestley in the earlier epidemic and Dr. Killick Millard in the later. That had constituted Leicester's luck.

What of the Future?

More than a quarter of a century ago the lecturer had speculated as to whether small-pox might not die out in the future as leprosy had done, but he had argued then that epidemics had been too recent and too severe to justify any assumption to that effect. During the quarter of a century that had elapsed since that speculation had been indulged in the position had vastly improved, but even yet one did not dare to assume that the danger had become negligible or had disappeared. No epidemic, such as had followed the Franco-Prussian War, had up till now been a sequel to the European War, and the return of the revaccinated armies to this country would really improve the general position as regards national protection. There is, however, a substantial risk of importation by persons from countries like Russia or Poland, with which communication is again opened up.

Wars have been followed by various pestilences amongst the civil population. As recorded by Dr. Prinzing, bubonic plague, typhus fever, dysentery, typhoid fever, and small-pox have been concomitants of great world struggles. The virulent pandemic of influenza has so far been the only outstanding accompaniment of the greatest of all wars, though in Germany, as already noted, the enormous number of Russian prisoners introduced the infection of small-pox, which obtained more hold than that country has ever experienced since it adopted its great system of vaccinal protection. It is too soon yet to prophesy that we have seen the last consequences of the European War in respect of epidemic disease. If, however, small-pox were to invade this country the measures at our disposal and our preventive equipment generally should enable us to deal with it, despite the fact that on the whole we are going back on, rather than developing, our position in regard to general protection obtained beforehand. If the disease is of the mild or American type with low infectivity it is all the less to be feared. If, on the other hand, the old European type of the "seventies" should begin to develop the means for meeting it are at hand. If vaccination and observation of contacts, supplemented by isolation, disinfection, and other measures for checking epidemics, were to prove insufficient, then he had no doubt that the spread of infection would result in the general adoption of the one solitary measure capable of controlling an extensive epidemic. That measure is vaccination, but it will be all the greater triumph of vaccination if even a limited resort to it under the modern method suffices to prevent any outbreak from assuming epidemic or pandemic proportions. Just as Lister's antiseptic system finds its greatest triumph in the aseptic system which evolved from it, in the same way success of the modern method of small-pox control will be the greatest triumph of the Jennerian prophylaxis.

BRISTOL CHILDREN'S HOSPITAL.—Mr. H. H. Wills has recently presented over an acre of land immediately adjacent to the Children's Hospital for the benefit of that institution. It is proposed to erect a nurses' home for the staff of the hospital.

THE FUTURE OF THE TUBERCULOSIS PROBLEM.*

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IN his opening remarks the speaker said:—I will attempt to deal with a part of the problem only—a part in my eyes perhaps assuming undue proportions and importance, but a stone which, if built into the building we are all striving to erect, may assist in strengthening the structure and help to make the work of others easier and its completion somewhat nearer of attainment. A broad view of the whole of our problem is essential, but at bottom the problem is one of the individual. One consumptive may resemble another in the extent of the lesion in the lung, but differences of temperament, character, social position, not to mention varying degrees of resistance to the disease, exist and have always to be considered. Of course, the problem has its financial side, and a very important side it is, but it cannot be insisted too strongly that the question at issue is of far greater complexity, and unless this is recognised all our calculation is work in vain. All of us are aware of the extent of the problem. The question is, can we prevent the spread of infection without which there can be no further extension of the disease?

Inadequacy of Present Measures.

It is unfortunately necessary at this stage to clear the ground somewhat, for there still exists at the back of the minds of some a doubt as to the infectiousness of the disease. We here, no doubt, are firm believers in the infectivity of tuberculosis—that it is contagious, that the spread of human tuberculosis (i.e., infection with the human bacillus)¹ is by direct, or in some cases indirect, means from one human being to the other. We give this hypothesis our lip service. Our words do not come up to our faith. We have certainly honoured the statement, but in the breach rather than in the observance. How often do we hear that the chief rôle of sanatoriums is that of education; that the patients who are discharged after a short stay have been instructed in the way of life and know how to live a life perfect in hygiene and adapted for the prolongation of working days. But what opportunity have they to put the precept into practice? Are not veritable sources of infection everyday, sent broadcast over the land? What steps are taken to prevent the spread of infection when we allow these unfortunates to wander at will? No doubt we keep the spark of life alight by small doles of money or food, we find underpaid jobs for them, we allow them to be exploited in the labour market, and we give all these endeavours a name of high-sounding quality and call it "After-care."

We all know how rapidly a consumptive who has had treatment at a sanatorium descends the social scale. The interval between treatment in an institution and the case becoming "advanced" is often very considerable, and it is throughout this time that nothing, absolutely nothing, adequate is done to prevent infection. Of course, I shall be told that I have forgotten our important service of health visitors and sanitary officials, who are daily making strenuous efforts to prevent the spread of infection and with much labour are paying daily visits to the homes of these people and instructing them in the way they should go. I agree, but they are engaged on a superhuman task; the patient's life is so varied, the circumstances so changeable, that it is impossible to secure an amount of supervision that can have any appreciable effect upon the spread of infection.

The middle case, coughing often—whether at work or in the home, or in places of amusement,—is an ever present source of danger and, unless sufficiently isolated, must be a centre from which dissemination of the disease takes place. The treatment—a term as elastic as it is vague, for in its true sense it can have no meaning when it refers to a consumptive patient in bad surroundings—is of no avail in preventing the spread of infection.

* A paper read before the Royal Institute of Public Health.

¹ The bovine bacillus being responsible for a very small proportion of pulmonary tuberculosis, probably not more than 1 per cent. (Cobbett).

The Difficulty of the Problem.

If it were our object to perpetuate the disease, there could surely be no more certain method than the one we now adopt. We have, indeed, adopted a faith blindly, or we do not accept a faith we profess. To say that it is difficult to convert our faith into works is to beg the question. That it is difficult should not make us shut our eyes and go gaily on in the opposite direction.

It may, of course, be the fear that after all we are not quite sure that the disease is infectious, for what is the evidence? Or, again, it may be the knowledge that the task to which we have put our hand is, indeed, impossible of attainment. In other words, we accept it as quite impossible to control the sources of infection, and that these sources are so numerous and unknown that no method of segregation could be devised to include not all, but even a small proportion, of them.

Is it a fact, for example, that just as there are carriers of the germ of diphtheria, so there are carriers of the tubercle bacillus, who go through life without any symptoms which might at any time attract attention, and yet are the means of handing on the disease to several, nay many, persons. I might illustrate the point by a concrete example. A Cambridge undergraduate, a fine athletic man, developed what was diagnosed as an attack of influenza. Its course was prolonged and there was cough and expectoration. The sputum was repeatedly examined, with negative results. The patient recovered completely. Some months afterwards he suddenly coughed up a mass of sputum, and being of a curious turn of mind brought it to the pathological laboratory with a request that it should be examined. Under the microscope the specimen was almost a pure culture of tubercle bacilli, so numerous were the rod-shaped organisms. The patient was apparently in the best of health.

It may be argued that such a case would be very difficult to discern, very difficult to isolate, and it may well be that amongst the well-to-do, those who live under the best conditions, the disease is spread by such an individual as I have just described.

Tuberculosis Does Not Weed Out the Unfit.

That insanitary houses, want of food, lack of the necessities of life are not the only predisposing causes of tuberculosis seems clear, for tuberculosis takes its toll from the rich as well as from the poor, from the athletic as well as from the poorly developed. This leads me to another point. It is often argued that tuberculosis is the great means adopted by nature to weed out the unfit. Such a statement is grossly inaccurate; it has done incalculable harm in preventing our legislators and the public at large from seeking the adoption of right methods of dealing with the problem. Tuberculosis never has been, and never will be, the means of improving the race—no disease has ever helped to such an end, and no disease ever will. It is the victim of tuberculosis, when that disease has worked its will, and not until then, who is the unfit. He has been made unfit by the disease, he was not unfit before he was attacked.

Recently, making a careful examination of the histories of all the patients admitted to the Cambridgeshire Tuberculosis Colony, it came as a surprise to me to find how high was the percentage of men who had led an athletic life before they were attacked by the disease. Many were conspicuous for the skill they had once displayed either on the football field or in some other strenuous pursuit. Looking back at one's own undergraduate days one is struck by the news of the illness, or even in some cases of the death from tuberculosis, of those whose physique was universally admired and whose prowess in athletics was specially commented upon.

Again, amongst soldiers discharged from the Army suffering from pulmonary tuberculosis it is the exception to find that those who are admitted for treatment are those who were placed by the Recruiting Medical Boards in Grade 3. Upon investigation it is clear that the men who are now invalided out of the Army on account of tuberculosis are those whose physique was particularly good and whose general condition gave no easy or obvious clue to the presence of a tuberculous nature in the lung. Would it not be well that this investigation should be prosecuted in other localities? Were this done I have little doubt that my Cambridgeshire results would be confirmed.

We know that those who have an exceptionally well-developed brain, those endowed with mental capacity far

above the average, fall a prey to the disease in no fewer numbers than do those not so endowed. We have merely to call to mind such names as John Adington Symonds, John Richard Green, Shelley, Keats, Chopin, Mozart, Robert Louis Stevenson, Jane Austen, Charlotte Brontë, and Washington Irving, amongst a host of others, to convince ourselves that if the brainless ones are often attacked by the tubercle bacillus, those to whom genius has been attributed are attacked in equal, if not in greater, proportion.

Look at the question how we will, we are forced to the conclusion that the tubercle bacillus is no respecter of persons, the strong and the weak alike are attacked; there is no question of any special susceptibility of the feeble and the weeding out of such in order that the race may be improved. The error so widely promulgated has done incalculable harm.

The Method of Attack.

The crux of the question is the problem of the "middle case." First the spread of infection must be limited. Our energies should be concentrated not so completely on the symptoms of the diseased—those who have well-defined symptoms and signs, in whom the lung tissue has broken down and by whom the bacilli are freely expectorated—in futile attempts to "cure" individuals. Rather must we devise and press forward a comprehensive scheme whereby the individual for whom we are arranging to care shall be placed in a position in which he may have the advantages of treatment which may bring about the arrest of the disease whilst at the same time he shall be rendered inert as an infective centre to the community. When we as a community realise that the segregation of consumptives during treatment can be made a practical proposition we shall have advanced a long way towards the elimination of infection. The advice to treat early cases is excellent, but until the mass of medical knowledge accumulated is sufficient to ensure this advance little progress along these lines can be made, though all efforts to attain it should be encouraged.

The greatest difficulty met with in carrying out after-care of the majority of these "middle" cases is the provision of suitable employment and occupation for them. Any frequently recurring breakdown, any lack of sustained energy, any want of power and physical force must unfit the worker to "carry on" under the ordinary workaday conditions in which the normal person works. No one realises this more fully than does the consumptive. Why, then, does he try to exist under such conditions? Simply because there are no others under which at present he can exist. No practical proposition has been placed before him. To maintain these cases in moderate health the equivalent of a living wage they must have, although they cannot be employed when a profit-and-loss sheet has to be drawn up and balanced. We cannot expect them to be a paying proposition. I have always maintained, and I believe that I have been justified in maintaining, that the labour of a middle case of consumption must be subsidised and that many of our failures in the past have been due to the fact that, consciously or unconsciously, we have always taken the consumptive at his face value. We have been too much influenced by appearances and feel that he ought to do more work than can really be expected of him.

We have only to glance at a group of consumptives to feel almost convinced unless we are "on guard" that they are a group of slackers. They appear so fit. Yet on applying the stethoscope our opinion is, or ought to be, instantly modified. Patients suffering from epilepsy are utterly incapable of earning a living under present economic conditions; a consumptive with moderate disease is in exactly the same position. We must bring our minds to realise this. When we have also educated the consumptive to realise this, we shall soon recognise that both from the individual point of view and from that of the community we must call into existence a set of conditions suitable to the patient's needs.

Such conditions are to be found in a colony. We must realise, difficult though that may be, that the medicine of yesterday has been satisfied with the treatment of symptoms, with the relief of individual suffering. In tuberculosis, at any rate, is it not time we started at the right end, to give up trying to heal symptoms, to catch up in a losing race?

Provisions Required at Colonies.

Colonies to be successful, to meet present needs, must include the sanatorium or rest house, and must extend the activities of sanatoriums both downwards and upwards. They

must receive advanced cases that will not consent to enter a home for the dying, but will grasp at the last straw of hope such as can be held out at a sanatorium. Opportunity for healthful work and healthful surroundings must be offered to those unfortunates who can no longer compete with the fit men in the world at large.

The early cases receive treatment and training, and with the added inducement of remunerative work may be kept under prolonged treatment and fitted to return to the world with the disease arrested. But the whole system must be linked together into a concrete whole. The usual conception of a colony is a place where tuberculous cases can be sent, there to work for a wage which is little more than pocket money, but where there is no room for cases that present any physical signs of disease. Indeed, so limited becomes the selection, due to the rigid medical examination, that few cases can be submitted to this special building-up process; and when to this is added the enormous difficulty of persuading a man to undergo training while a wife and family live on the bare necessities at home, we see that if this conception be accepted the scheme must be of very limited scope, more limited even than that of the sanatorium. When, further, we consider that no practical man believes that he can be trained as a practical farmer or small-holder in a few months, and that even 12 months is not sufficient, we begin to appreciate the reason that so few men will consent to undergo the ordeal.

We know and they know that a poorly trained man stands no possible chance of earning a living wage in the open labour market, and a poorly trained consumptive even less. It is obviously far better for such an early case (I am speaking of the tubercle-free patient, devoid of physical signs—the usual candidates for such a colony) to be so financed by an after-care association on the Cambridge principle that he may continue to work at his own or some allied trade. As yet he is not a danger to the community; when he does become so, if under dispensary supervision, he can be persuaded again to enter an institution.

The Case with Active Disease.

When we come to deal with cases of the next category the story is very different. The man has active disease, albeit somewhat retarded by treatment at a sanatorium. He is refused admission to a colony such as that just described, he cannot without a serious relapse return to his original trade, he cannot be suitably helped from outside by an after-care association as his relapse is certain, and because of the extreme difficulty of finding suitable employment for him. These are the cases which, unfortunately, are now assisted with small doles of money and food and an underpaid job. Better far that such assistance should cease and the patient become an inmate of an institution. The man receives but palliative treatment, and the community no real protection against infection.

The pity of it is that we do not realise that under favourable and well-defined conditions the patient is capable of doing more work. Such a case should, indeed, excite our sympathy. Here a man obtrudes himself on our notice six days out of seven—a man who cannot find his place in the world, but who, left to his own devices, disseminates the disease to his family or neighbours and fellow members of the community. He is the central factor in the problem of tuberculosis, a far more important factor than the advanced case—the bedridden case—where, although the danger of direct and concentrated infection is greater, it is so circumscribed that it is limited to a small—family—circle.

In the past we have been content to limit our endeavours to the favourable case and to leave untouched—untouched as far as effective treatment and the prevention of infection are concerned—the middle case. The reason for this is not far to seek, we have been blinded by the transitory results of sanatorium treatment and have shut our eyes to the wreckage which such treatment has left in its trail. Very naturally we have no liking for disappointing results. The individual case which goes steadily downhill is, it must be confessed, a disheartening proposition if we are content to focus our attention on the treatment of the individual.

It is obvious that our attention should not be so focussed, but that we should survey the whole field in order that we may make up our minds, for if we do not so make up our minds somebody else will soon do it for us, that it is necessary, in the name of humanity and to protect ourselves, to care for these cases. Once we view the problem from this

standpoint and grasp the essential fact that the disease is spread by the middle case, we cannot escape the logical conclusion that such cases demand our care and attention, and at once.

Admitting all this, the fear still possesses us that so gigantic a problem requires almost superhuman effort for its solution. Sir Arthur Newsholme holds that by the admission of advanced cases from amongst the poorer classes into the wards of certain infirmaries the spread of the disease has to a certain extent been lessened. Surely this points the way to the next step—the segregation of these middle cases in colonies, where, with the best chance possible of recovery, they also cease to be a source of infection to others. If by the voluntary segregation of advanced cases a perceptible improvement has been made, is it not logical to assume that we may expect still greater improvement when some method of segregation is found for the middle cases, those who find themselves stranded and unfitted for the struggle of existence in the world as at present constituted.

The Method Adopted at Papworth Colony.

Objections and reasons that such a proposal as that of the Cambridgeshire Tuberculosis Colony must be difficult of realisation are, of course, put forward. Allow me to take, as a concrete example, Papworth Colony, where experiments are in progress to test the conditions under which men will remain in the country although used to town life, and not town life only, but London life.

My experience is that the first great question to be considered is that of a wage, or payment for work done. The difficulties surrounding this question are many and complex. To begin with, we are confronted by certain provisions of the National Insurance Act in which it is expressly stated that any man working for a wage forfeits his sickness benefit. Latterly, however, since it has been the practice in some institutions to allow patients to work, the dividing line between remunerative and non-remunerative occupation becomes difficult of definition. No objection can be raised to the institution paying to an after-care association a subscription equivalent to the value of the work done, nor can there be any objection to that association paying over to the patient a sum of money to supplement the sickness benefit and thus enable his dependents to live in decent circumstances while the man is under treatment.

This plan has been adopted at Papworth with success. This method of procedure opens out very considerable possibilities, especially for the ordinary insured person. The usual plea put forward by an insured person, especially a married man with dependents, is that it is impossible for him to live in luxury at a sanatorium while his wife and children at home are asked to exist on 10s. a week, a sum sometimes supplemented by a dole from the Charity Organisation Society, but an extremely unsatisfactory method. In the method adopted at Papworth, the sickness benefit can be augmented within limits by the man's own earnings, and he has the satisfaction of feeling that even whilst undergoing treatment he is making a definite contribution towards the upkeep of his family. This method is new, but I hope and believe it will be found to be thoroughly sound.

It will thus be seen that a very definite link is forged between the colony and the after-care association. The inducement to earn a wage is so great, however, that it is difficult to restrain the men from doing more hours of work than are prescribed. So contrary is this experience to that of sanatoriums that I fear I may not be believed, but it is a fact. In our boot-repairing department during the first two months, while the patients were apprentices, it was a matter of surprise that the men could earn 12s. per week of 32 hours, at the rate of pay current for boot repairing in Cambridge, and this rate the men receive. Further, the two apprentices, one a Limehouse labourer, the other a college cook, have been taught by a practical boot repairer—a London patient. This man has not only taught these men, but has earned his money as an instructor at the same time.

The Solution of the Question.

This makes clear four points: (1) That to change a man's trade is a practical proposition; (2) that the work can be carried on under proper hygienic conditions; (3) that the public have no objection to having their boots repaired by consumptives; and (4) that the labour must be subsidised to

make it a practical proposition for the working man. The moral to be drawn from this is, that once a practical proposition is placed before these men—a sound commercial proposition, not one from which they think the institution is making a profit out of their labour—they will seize the opportunity, for they know they are benefiting both from a health point of view and financially; but unless you can make the latter clear you can expect no success. I must again insist that these men are "middle" cases; that they have tubercle bacilli in their sputum, and are cases which, left in their ordinary surroundings, would soon fall to the bottom of the scale.

When we take into consideration the fact that these men, being ex-soldiers, have a full pension of 27s. 6d. per week, it cannot be a matter of surprise that they consent to remain. We have stated that the colony can and does offer better conditions of work and that these involve no impairment of a man's self-respect. Applicants, of course, are not wanting, but the State has the assurance that in return it is getting a good bargain in the elimination of infection.

Similar results are being obtained in other departments, and from them it is possible to draw only the same deductions. The difficulty is that of demand and supply, and it is here that great effort is needed and a very good business brain required, but at present inquiries for goods and orders placed with us keep the departments busy. It will be said that this is the greatest difficulty of all, but it has been repeatedly stated that the greatest difficulty was to get the men to work. Having demonstrated that this is not the case, I have confidence that the other difficulty will also be got over.

The real solution of the question is a State subsidy for tuberculous labour and the introduction of labour-saving appliances to lessen the disadvantage under which a consumptive suffers. If that labour can be turned to account, not in the way of reducing the cost of running an institution—who ever thought of reducing the cost of a hospital by employing chronic invalids on the staff?—but in making it contribute to the wage of such labour, the other part being forthcoming from the State as its share of payment in return for the prevention of infection, it seems to me that the problem is well on the way to solution.

In any case, let us get rid of the fallacy that tuberculous labour can be made to pay; of the idea that all the money paid by the State is for the alleviation of symptoms. Further, let us concentrate on humane and voluntary segregation by making it so attractive that few consumptives will face the difficulties and dangers of open competition if they can take advantage of the facilities now provided. Public opinion, educated on these lines, will soon insist on being rid of a source of infection so dangerous to its well-being. Once the facilities are offered, if offered in no miserly spirit, we may see the dawn of a new era in the treatment (using the term in the widest sense) of the disease.

Work in Other Departments.

The results of the carpentry and joinery departments are of considerable interest. At the head of the carpentry department is a trained carpenter and joiner, who directs the work and instructs the patients. We are now convinced that useless work put forward merely as training is waste of time and energy, but we find that immediately a patient comes to the shop he is ready for light work on a definite job. We have, however, to reverse the usual process of training, for in the colony workshop he is instructed in the fitting together of parts which have already been prepared by those who have been longer at the work and have been passed on to the heavier grades of labour. In other words, the process is reversed, but by means of a method whereby a patient is set to make one particular part—in fact, is placed on repetition work—no time is lost and his labour is at once remunerative. His interest is also immediately aroused, as his skill develops so his strength increases, and the two factors combined place him on a higher scale of productive work.

It is my experience that very few patients fall below the 25 per cent. standard even at the beginning of their instructional career, and the percentage increases monthly. On repetition work they may ultimately attain an average of 50 per cent. and even rise to 75 per cent. I suspect that our method has, perhaps unconsciously, been based on the experience of munition works, but from whatever source it has come it undoubtedly meets with very considerable success.

Up to the present time disposing of our produce—shelters—at the price quoted in the open market, we could during the major portion of the time have paid a wage not much below the trade-union rate. As an example, I would take the accounts of the last year to illustrate the financial side of our industry. The total receipts of the carpentry department allowed of a profit of 20 per cent. to be paid in wages. There were working in the shops during this period 12 unskilled patients, and after paying instructors' wages there was a considerable sum available for division, as a wage, amongst the 12 patients. In order to safeguard ourselves when we come to undertake other work—we have brought the shelter-making repetition methods almost to a fine art—we stipulate that if we must turn out work at a competitive price we must have a subsidy of 10 per cent. to 15 per cent. in order that we may pay our patients the wage desirable and necessary. We have not needed this subsidy so far, but our success must not blind us to the fundamental fact that tuberculous labour must be subsidised, and even considerably subsidised.

The Question of a Subsidy.

The working day is but six hours, and even if the labour could be paid for at a rate equal to that of a trained healthy person, the total at the end of the week would be insufficient to support a man, his wife, and family in the way in which they should live. It will thus be seen that the question of a subsidy is a very necessary and urgent factor in the problem. We must not look upon this subsidy as a dole for the relief of the patient, for on this the amount would, according to our past ideas, be too great; rather must we look upon it as money expended for the protection from infection enjoyed by the community. Far better to have this assurance, than to have the depressing picture of a family in poverty and distress, vainly endeavouring to struggle on with a varying amount of poor relief and charity without any such protection. In a colony such as we are trying to build up at Papworth it is probable that the families of our colonists, being easily accessible, may be so trained and educated that they may be made stronger and safer for the struggle of life than if they were allowed to remain under undesirable surroundings of poverty and want. However that may be, there is hope of a brighter future even though time may unveil some of our errors.

May I close by quoting the words of a consumptive—Washington Irving.

"What after all is the mite of wisdom that I could throw into the mass of knowledge? Or how am I sure that my sagest deductions may be safe guides for the opinion of others? But in writing . . . if I fail, the only evil is my disappointment. If, however, I can by any lucky chance, in these days of evil, rub out one wrinkle from the brow of care or beguile the heavy heart of one moment of sorrow. If I can now and then penetrate through the gathering film of misanthropy, prompt a benevolent view of human nature and make my reader more in good humour with his fellow beings and himself, surely, surely, then, I shall not have written in vain."

THE Y.M.C.A. AGRICULTURAL TRAINING COLONY, KINSON, DORSET.

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DURING the summer of 1917 the Council of the Y.M.C.A. established a farm colony at Kinson in Dorset for recently discharged Army men with early or arrested tuberculosis. The Council secured a small property which had served as a private sanatorium, situated some five miles from Bournemouth and Poole, upon sand and gravel soil and enjoying a good record of sunshine and rainfall. The land consists of a farm of 33 acres, made up of 20 acres arable land, 9 of grass, 2 of woodland, and 2 devoted to poultry. The farm buildings include a small house, granary, hay and corn barn, stabling for three horses, cart shed, chaff-cutting and root-pulping shed, cow-house with standing for ten cows, three calf booseys, piggeries, and other buildings.

The colony buildings consist of a central block constructed of brick and tile comprising dining-room to seat 50 persons, recreation-room, lecture-room, kitchen, scullery, stores, linen-room, and other offices. Sleeping accommodation for 22 patients is provided in wooden chalets, each in two sections, containing two beds. The quarters for the resident

staff consist of wooden buildings and a small farm-house. Water and gas are obtained from the local main. The capital expenditure in purchase of property and erection of additional buildings amounted to £4000 approximately.

When the colony was started it was intended to provide the inmates with life under sanatorium conditions and a training to fit them for permanently taking up work on the land. An officer recently discharged from the Army, who had been trained as a farmer, and also had practical experience of sanatorium routine, was appointed resident superintendent. Medical supervision and direction were secured by a weekly visit from Dr. E. Hyla Greves, of Bournemouth. The resident staff included a male nurse and a working foreman. The men admitted mostly came direct from various military hospitals, chiefly upon certificates by the medical officers. Whether at work or not, the men received 1s. a day as pocket money.

Scope of Scheme.

Several months' experience showed that the objects of the institution were not generally appreciated by the medical officers who recommended patients for admission. A large proportion of the patients sent to the colony were not such as would benefit from the special educational facilities offered. In consequence, early in 1918, after consultation with the Ministry of Pensions, the training scheme was reorganised, as described in the following leaflet issued by the Y.M.C.A. and the Ministry of Pensions:—

The Kinson Farm Colony, situated about five miles from Bournemouth, provides accommodation for 21 ex-soldiers who have been invalided from the Army on account of pulmonary tuberculosis. It is designed to provide an agricultural training for men who wish to settle on the land either in this country or in the colonies.

1. Applicants for admission must be suffering from *quite early or arrested* pulmonary tuberculosis, provided that tubercle bacilli have been found in the sputum, or if they have not, the occurrence of an attack of pleurisy with effusion or an unquestioned hæmoptysis (of definite amount) must leave no room for doubt as to the correctness of the diagnosis.

2. They must be men whose previous work has been such as would probably aggravate disease and who are, therefore, desirous of receiving an agricultural training.

3. They will only be received from a sanatorium, and must be able to work for at least six hours a day without pyrexia, malaise, or undue acceleration of pulse.

4. They must have shown themselves to be intelligent hard-working men, of good character.

5. They must enter into an undertaking to remain 12 months at the colony.

6. During the year's treatment and training, the pension of the colonist will be in abeyance, but an allowance at the rate of 27s. 6d. per week will be made for him from which 12s. per week will be deducted towards the payment of his board and lodging. He will, therefore, be entitled to a sum of 15s. 6d. per week, during the twelve months he is at the colony; of this sum it is proposed to pay over to him 5s. weekly, leaving the remainder to accumulate to his benefit until he is discharged from the colony, or, should he desire it, the balance may be paid weekly to such dependants as he may select.¹ It must be understood that the amount accumulated will not be payable if the man leaves the colony before the termination of his year, unless the medical superintendent of the institution certifies that there are special reasons justifying it.

In addition to the above allowance, the colonist will be entitled during the last six months of his course to a bonus of 5s. per week, provided that he satisfactorily completes the full year's course of (treatment and) training. This accumulated bonus will be paid to each man at the termination of the year's course. And at the same time he may in addition hope to receive a small sum, representing half of any net profits which may have accrued from the farming operations in which he has been engaged; the exact amount of this must depend upon the sum due to him as his share of the profits made on his section of the farm.

Applicants who, from the information furnished on the forms supplied, appear to be suitable are examined by me on behalf of the Y.M.C.A. and the Ministry of Pensions.²

The staff of the colony is made up of Mr. Richard Hunt, who has long experience of farming, and as honorary com-

mandant directs the work of the institution; Mrs. Richard Hunt, honorary matron and housekeeper; a secretary, an ex-service man discharged on account of tuberculosis; an orderly, also an invalided soldier; a cook, a kitchen-maid, and a staff-maid. The outside personnel consists of a consumptive ex-soldier, who holds the post of handy-man and instructor in carpentry and engineer's repairs, a "stock-man," and a "horse-man" or "carter."

The Council of the Y.M.C.A. are responsible for the maintenance of the settlement, the administration of which they have delegated to the following committee:—Hon. Mrs. Stuart Wortley, O.B.E. (chairman); Cornelia, Lady Wimborne; Corisande, Lady Rodney; Lady Leitrim; Lieutenant-Colonel T. D. Acland, R.A.M.C.; Dr. Noel Bardswell, M.V.O.; Mr. Vivian Young; Mr. F. J. Chamberlain, C.B.E. The Y.M.C.A. management receives from the Ministry of Pensions 30s. per week per head, the balance being defrayed by the Y.M.C.A.

The colony has not been established on its present lines for sufficient time to allow of the preparation of a balance-sheet; however, the weekly cost per colonist for maintenance and training does not exceed 30s. It is also impossible as yet to estimate the financial result. During the past six months the value of the stock, crops, &c., has appreciated at least 50 per cent., and there is no doubt that the farm is more than paying its way.

The Working of the Colony.

In the spring of 1918 the particulars just given were sent to the superintendents of most of the leading sanatoriums with a request to bring the information to the notice of ex-sailors and soldiers. During the following six months a large number of applications were received, mostly in regard to men not up to the required physical standard; it was not until the late summer that the full complement of 21 colonists was obtained. The following particulars of the first 25 selected candidates may be of interest:—

| | | |
|---------------------------------|---|----------------------------------|
| Salesman, 32, widower. | Hairdresser, 23, single. | Under gardener, 23, single. |
| Mechanic, 37, married. | Clerk, 23, " | Clerk, 24, single. |
| Shoemaker, 45, " | Newspaper vendor, 31, single. | Electrical engineer, 24, single. |
| Seaman, 21, single. | Dispenser, 27, single. | Shop assistant, 20, single. |
| Clerk, 24, " | Assistant in surveyor's office, 26, single. | Moulder, 28, married. |
| Policeman, 30, married. | Hairdresser, 32, married. | Purser, 27, single. |
| Journalist, 27, single. | Shop assistant, 19, single. | Customs agent, 25, widower. |
| Clothing designer, 33, married. | Clerk, 24, single. | |
| Grocer's assistant, 22, single. | | |
| Railway clerk, 23, single. | | |

A small waiting list is maintained in case some of the colonists are unable to complete their training. The care in selection has been well justified, since from the point of view of physical capacity, character, and intelligence the colonists represent a most satisfactory class of sanatorium patient. The proportion of married men with dependants, 6 out of 25, is noticeable; but for their pensions and allowances none of these men could have undertaken to stay for 12 months at the colony.

It was decided so to model the scheme of training as to fit the men more particularly for the management of small holdings. The farm was divided into three self-contained 10-acre holdings, each stocked adequately by the Y.M.C.A. in respect of live-stock, implements, building, &c. To each holding were allotted seven patients who worked under the direct supervision of the resident commandant. Careful accounts and records of periodical valuations were kept with a view to profit-sharing. The patients were guaranteed any risk of loss. The advantage of this plan is that it develops the initiative of the patients, encourages industry and interest, and secures practical training. The produce of the farm after the current needs of the colony are met finds a ready market in Bournemouth, where it is sold by auction. All the colonists in turn load up the transport and attend the sales, so as to gain experience of marketing.

The theoretical training includes lectures on soils (varieties of), crops, manures, implements and machinery (of a farm), feeding stuffs, live-stock (horses, cattle, pigs, poultry, rabbits, bees), and fruit culture.

Of the features of sanatorium life there are maintained in the colony routine the three "square" meals, the rest before dinner and supper, and the early bed hour. Temperatures are not taken regularly; should a man feel unwell he reports to the commandant before proceeding to work. The commandant, though not qualified in medicine, has seen

¹ Married men with dependants receive maintenance allowance on the usual scale.

² As from Jan. 1st, 1919, the arrangements for admission and period of treatment are being made by the National Health Insurance Commission instead of by the Ministry of Pensions, but this will not materially affect the general conditions of employment in the colony described in this paper.

much hospital service during the war and is an efficient house physician; further, he can communicate by telephone with Dr. Hyla Greves. There is little sickness, and practically no time is lost on this account. The arrangements at the colony are proving the success anticipated. The progress of the patients, as evidenced by gain of strength, the clearing up of symptoms and physical signs of disease, and the disappearance of sputum, is uniformly satisfactory.

Subject to the somewhat exacting nature of farm work, the colonists enjoy a large measure of liberty. There are no bounds, and such amenities and social life as the countryside offers are open to the men. On Saturday afternoons and Sundays, with the exception of the weekly rota of men who carry out essential duties, such as feeding stock, &c., the colonists can go further afield. It is encouraging to note that the men tend more and more to spend their free hours in the country rather than in the neighbouring towns. The colony recreation-room is provided with two small billiard tables, a piano, a gramophone, and other amusements, also the daily papers and farming journals. Without exception the men express their marked preference for the life at Kinson to that at a sanatorium.

Several months' running of the colony on the lines just described revealed some unanticipated difficulties. It was impossible so to divide the farm as to secure land of equal quality for the three holdings. After consultation with the men, whose opinion was almost evenly divided, the three-holding system was, not without reluctance, abandoned in favour of a scheme whereby all the land is worked as a small farm. As now constituted the farm consists of 9 acres of grass and pasture, inclusive of 2 acres devoted to poultry, and 25 acres of arable land, the latter of which includes $1\frac{1}{2}$ acres of orchard, 4 acres under four-course rotation, $2\frac{1}{2}$ acres of market garden, and $1\frac{1}{2}$ acres of permanent catch-crop. The stock consists of 9 cows, several calves, 2 horses, 3 breeding sows, with their litters, and 300 head of pure-bred poultry.

The 21 colonists are divided into four parties which in rotation are appointed to: (1) stock—care of all animals, dairy work, &c.; (2) carting, ploughing; (3) general farm work—all operations save ploughing and horse work; (4) market gardening and marketing; and (5) poultry. Approximately, a squad is engaged under skilled supervision for a week at a time in each department.

A Provisional Estimate of the Prospects of the Colonists.

Briefly, the record up to Dec. 20th, 1918, is as follows: 8 patients have left the colony, 1 on account of disinclination for the life, 3 for breaches of discipline, and 4 owing to physical incapacity. Thus, only 4 men have shown themselves definitely unequal to the work which, day in and day out, is somewhat strenuous and extends from seven to eight hours.

With respect of the adaptability of the men and their prospects, the opinion of Mr. Hunt as practical farmer is of interest. Of the 21 men now in residence, four, in his opinion, are not physically capable of the full training and are unlikely to make independent smallholders. For these men a simple training is indicated such as will enable them to supplement their pension; for example, the care of pigs, fowls, and goats, and some knowledge of vegetable growing and bee-keeping. The remaining 17 men, granted favourable conditions of settlement, all promise to make good; several of them, men of education, would do well to study at an agricultural college with a view to farming on a larger scale.

Taking the men collectively the training has to begin with the veriest A B C of country life. Again, the men, although working for from some seven to eight hours daily, cannot by a considerable margin compass the output of a normal person. Education is slow, and Mr. Hunt states that 12 months' training will not be sufficient save in exceptional cases with previous experience. It is his opinion, also, that to judge by their present standards of knowledge and physical endurance, a small number of the men only on completion of their training in September, 1919, will, if single-handed, be able to earn their living on the land. This renders the settlement of the men a matter for serious consideration. He suggests that on completion of the 12 months' training the most efficient men be found positions as paid assistants upon established holdings in the neighbourhood of Kinson with a view to gaining

further experience. But the men are all impatient to start for themselves when their year is up. Another proposal is that the picked men be settled on holdings and that the less proficient be allotted to them as assistants. It is evident that special provision must be made for settling the colonists. To allow them to leave the colony and to trust to their own resources would in many instances spell failure. The conditions of settlement cannot be too favourable; good land, easily worked, markets of easy access, generous landlords, and opportunities for obtaining skilled advice are essential. It is to be noticed that the experience of Kinson supports the view that the vocational re-education of the consumptive, to be of use, must be associated with a scheme for the provision of employment subsequently.

The plan which seems best to meet the requirements of men trained on farm colonies is their settlement as they become sufficiently skilled upon holdings within easy access of the colony, for preference, as tenants of the colony management. This would permit of the cooperation of the several holders and the continued supervision and direction by the expert farmer in charge of the colony; another material advantage would be that when, as will certainly happen, a tenant has need of rest for some days, assistance upon which may depend the success or failure of a season, could be provided by the pupils at the colony.

The ideal that should be kept in view is to enable a tuberculous man, after proving himself on a small holding, to pass in turn to progressively larger holdings, and eventually to become a large farmer employing his own labour. In view of the youth of the general run of the Kinson colonists, this ideal is quite possible. The whole question of the future of the trained colonist and the best means of providing for his settlement is now under consideration by the council of the Y.M.C.A.

RAT-BITE FEVER:

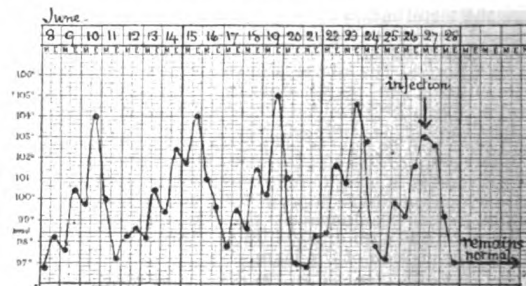
TWO CASES TREATED WITH APPARENT SUCCESS
BY A SINGLE DOSE OF NOVASENOBENZOL
INTRAVENOUSLY.

By R. V. SOLLY, M.D., M.R.C.P. LOND., F.R.C.S. ENG.,
PATHOLOGIST TO THE ROYAL DEVON AND EXETER HOSPITAL
AND TO THE GROUPED WAR HOSPITALS, EXETER.

THE two cases here described were undoubtedly examples of rat-bite fever.

Notes of Cases.

CASE 1.—Patient aged 20. Had suffered from pulmonary tuberculosis for last four or five years. Previous to the present attack his lung trouble was quiescent; appetite good; temperature normal; some dullness at right apex in front; no crepitations or signs of activity. Nine weeks before admission to nursing home he was bitten on the left little finger by a rat. Wound not washed for about one and a half hours. Three weeks later the present attack began. Every two or three days the temperature rose to about 104° F. and



Periodic rises of temperature in Case 1.

sometimes 105°. He had severe aching in back and legs; felt cold and shivered; no actual rigor; no rash; skin felt itchy during attack. He occasionally felt sick; latterly mouth was very dry. The lymphatic glands above left elbow and in axilla became enlarged, but now can hardly be felt. The wound healed in a few days.

Blood culture, aerobically and anaerobically, was negative. White cells, 17,000 per c.mm.; polymorphs 90.5; lymphocytes, 7.5; large mononuclears, 2 per cent.; no

coenophiles. No spirochaetes or other parasites seen in stained films. On dark-ground illumination of citrated blood no definite spirochaetes were found. One peculiar body was seen—a round body rather smaller than a red blood cell with two long narrow processes which exhibited a wavy motion. I cannot say whether it was an artefact.

At the height of temperature, on June 27th, 0.45 g. novarsenobenzol was given intravenously. The temperature fell and was down for a month. Then for about a week it rose at night; also some swelling of left arm. Since then, up to October, he has been quite well; no rise of temperature.

This case was complicated by the patient having suffered from pulmonary tuberculosis, but previous to the rat-bite this was quiescent. I did not see him in the attack a month after the novarsenobenzol injection, but the attack seemed to have had no resemblance to the former ones.

CASE 2.—Pte. C. H., aged 30, a patient in a war hospital, Exeter. On Jan. 7th, 1918, he was bitten on the finger by a rat. He reported sick in February, and since has had rises of temperature lasting about 24 hours, generally with intervals of four days. During the attacks he lost his appetite, felt sleepy, and had maddening headache. Distinct skin eruption; large raised erythematous patches all over the body; itching severe. He generally vomited during the attack. The temperature rapidly rose (103° or 105° F.), rarely lasting more than 24 hours. The wound healed in three or four days; apparently no enlargement of lymphatic glands.

At Exeter it was discovered that he had been bitten by a rat. On July 12th, 1918, an injection of 0.45 g. novarsenobenzol. Temperature remained normal for a month, then went up to 101.8°. No treatment was applied; since quite well except for a slight attack of influenza.

A differential blood count showed a polymorph percentage of 80. No malarial or other parasites seen in stained films, or by dark-ground illumination of citrated blood. On blood culture in one tube a Gram-negative bacillus was obtained slightly motile, forming indol, no liquefaction of gelatin, forming acid and gas with glucose, lactose, and mannite, and negative with sucrose; litmus milk, acid and clot. Evidently a coliform bacillus.

In this case the pyrexia occurred about every five days for over five months. There were no signs of the disease wearing itself out till the intravenous injection.

Causation.

In THE LANCET of Sept. 8th, 1917, I reported a case of "periodic attacks of pyrexia"; a single dose of galyl given intravenously was followed by complete recovery. Professor Tanner Hewlett¹ said how much it resembled rat-bite fever, but there was certainly no history of a rat bite. In THE LANCET of Feb. 16th, 1918, Captain S. R. Douglas, Dr. L. Colebrook, and Mr. A. Fleming report a case of rat-bite fever. A streptococcus having the characters of *Streptococcus pyogenes* was isolated on anaerobic culture from the enlarged glands of axilla. After vaccine treatment complete recovery took place; there seemed every reason to suppose that this organism was the cause of the pyrexia.

In my cases I could not find any spirochaetes, unless the peculiar body described might have been a couple of these adhering to a red cell. Its appearance is somewhat suggestive of the *Spirocheta icterohamorrhagica*, found by Dr. Alfred C. Coles in the blood of the common rat.² In my second case, on blood culture, in one tube a bacillus having the cultural characters of *B. coli communis* was obtained, but I think this must have been a contamination.

In these cases of rat-bite fever so many different kinds of organisms have been found on blood culture, sporozoa, streptothrix, *Micrococcus tetragenus*, &c., that one cannot help feeling suspicious, considering the fallacies of blood cultures. Spirochaetes have, no doubt, been found in blood and fluid from enlarged glands, by Japanese observers, in cases of rat-bite fever. Cases have consequently been treated by salvarsan, which is advised by Professor William Osler.³ Whether this disease is caused by spirochaetes or other unknown protozoan, or is a bacterial infection due to a streptococcus or other organism, is certainly not settled. The marked leucocytosis of polymorph type is perhaps in favour of the latter view.

It would be interesting if in a case of rat-bite fever a definite organism such as a streptococcus could be obtained

from blood or gland juice, and then a cure produced by salvarsan. There is, I suppose, no doubt that salvarsan is of great benefit in many cases of pernicious anaemia, supposed by Dr. W. Hunter to be due to a streptococcus. Dr. G. Stopford Taylor⁴ describes the benefit of intravenous injections of neokharsivan in cases of tuberculous skin ulcers, lupus, syphilis and eczema, and blepharitis. Many diseases other than syphilis might be successfully treated by salvarsan or its substitutes.

PROPHYLACTIC TREATMENT OF CONSTIPATION IN CHILDREN.

By VYNNE BORLAND, M.B., CH.B., B.Sc. GLASG., D.P.H.,
ASSISTANT MEDICAL OFFICER, WILLESDEN URBAN DISTRICT COUNCIL.

THE frequent occurrence of constipation in children is a fact which soon obtrudes itself upon the notice of any doctor conducting an infant welfare consultation. And considering the bearing this condition has on the health of the child in later years, an endeavour is made here to give a few suggestions which may prove helpful to those in charge of a welfare clinic.

Definition of the Term.

First of all the exact meaning of the term "constipation" must be clearly understood. Inquiry often elicits the information that a child's bowels move every day. But this is not enough. A sufficient motion should occur each time. A child may pass a small stool each day and still have a loaded rectum. If the stool consists of small dry pieces it is almost certain that the rectum is not being emptied thoroughly. Constipation means that, for some reason, the rate of propulsion of the bowel contents and the amount expelled are below normal.

Before constipation—threatened or present—can be diagnosed, a knowledge of the characters of a normal stool is necessary. For the first few days the infant's bowels may move two to six times per day. The stool consists of meconium—a viscid, tarry-looking substance, almost odourless or only possessing a faint inoffensive smell. The colour gradually changes to an orange-yellow. In bottle-fed babies the colour may be lighter at first owing to dilution of the feeds, but the colour becomes darker as the feeds become stronger and contain more fat. The number of stools per day is not so important as their character. If the colour is good, small inoffensive, consistence soft, and no straining, one motion per day is satisfactory.

Care of the Child: Cultivation of Regular Habits.

In the prevention of constipation, satisfactory hygiene in the home is of paramount importance. Too often a child is given a purge without any inquiry into the home conditions or as to how it is cared for, with the result that its bowels are only temporarily relieved. The child should have abundant fresh air and sunlight during the day and should sleep alone in a fresh airy room protected from draughts. No fire is necessary. The position of the child in the cot should be changed at intervals. The child will be healthier, and consequently the bowel will share the benefit in tone given to the whole system.

Exercise should play a prominent part in the daily routine. Regular periods should be reserved for this, the time and amount being regulated according to the child's age. At first freedom in kicking its legs about at intervals during the day is sufficient, and as age advances it should be allowed to crawl about in a little pen.

The importance of cultivating regular habits as early as possible cannot be exaggerated. Feeding times should be at definite hours, the child being awakened if necessary. The longer the interval between the feeds the better. Almost any child can begin right away with 3-hourly feeds, receiving six feeds per day. Others do well on 3½- or 4-hourly feeds, receiving five feeds per day. The writer has found that in a large number of cases even four feeds per day, with 4-hourly intervals, produce satisfactory results. But the essential point is that, whatever periods are chosen, strict regularity must be adhered to, and in no case should the child be fed during the night.

¹ THE LANCET, 1917, II., 562.

² THE LANCET, March 30th, 1918.

³ Principles of Medicine, 1912.

⁴ Brit. Med. Jour., Oct. 19th, 1918.

The bowels tend to move more readily after a feed, and advantage of this should be taken by training the child into the habit of a morning stool after the bath feed. This can, in the majority of cases, be accomplished by about the end of the second month. The bath should be given at the same time every morning, and if there is any tendency to constipation the abdomen should be massaged gently with some warm oil—to facilitate rubbing—over the tract of the colon, commencing in the right groin and ending in the left. After the feed the child should be held over a small pot, and if this stimulus is insufficient the anus should be lightly tickled with the finger. This acts as a suggestion that something is required.

Some help to peristalsis may be required in some cases to begin with. A dose of syrup of figs, or other mild laxative, given at night is usually effective. If a lubricant is required the best is liquid paraffin. Olive oil is not satisfactory, since a large proportion is absorbed. Whatever is employed the dose should be gradually decreased each night. If the bowels have not moved in the preceding 24 hours, a warm normal saline enema, 1 drachm to an ounce, is best; this increases the tone in the bowel. Large enemas should not be given, as these tend to produce distension and loss of tone. If soap is used, either as an enema or as a suppository, only a mild superfatted soap should be employed, as ordinary soap is liable to set up catarrh and proctitis, and consequently constipation. Either method should not be pushed for any length of time, otherwise actual constipation will result owing to impairment of the normal rectal reflex.

A warning should be given about that unnecessary evil, the binder. Most mothers cannot explain why it is used. They imagine that it is the proper thing to do, as all the babies they have ever seen wear one. A few have the idea that it supports the child's back when, as a matter of fact, it prevents the proper development of the muscles of the back and abdomen. When it is properly applied and stays in its intended position—i.e., round the abdomen—it acts as a constricting barrier to the bowel contents. When fixed loosely, as it usually is, it slips up the body and prevents proper development of the chest. The binder should not be used after the navel has healed, but should be replaced by a woolly vest.

Treatment of Constipation in the Mother.

The expectant mother should be taught the importance of regulating her bowels and carrying out necessary treatment throughout the nursing period. It is practically hopeless to treat a constipated baby by purging the mother, but if she avoids constipation both during pregnancy and after parturition it will be of advantage to the child. All abdominal constriction should be avoided. If the habit of stooling after breakfast has not been practised, attempts should be made to develop it. A glass of hot water half an hour before breakfast, made more palatable by adding a pinch of salt, often acts beneficially. Fresh vegetables should be taken freely. If this is not sufficient small doses of senna at night are good. A favourite form is the infusion from the pods, or some mothers prefer to chew one or two pods. It is more satisfactory to take small doses every night, thus ensuring the morning stool, than to take larger doses once or twice a week. Many expectant mothers take regular weekly doses of castor oil, not only to keep their bowels regular, but occasionally from a mistaken belief that it confers an easy labour. Needless to say, they become more and more constipated.

Improper Use of Castor Oil for Children.

Castor oil is first favourite as a purge in children. One is frequently told with pride by the mother that baby's bowels are regular as she gives it a dose of castor oil every week. The first fault is made in some cases almost as soon as the child is born. A dose of castor oil is given to clear out the meconium, and the mildly stimulating effect of the colostrum is lost, since the bowel is already tired out. This, unfortunately, is the starting point in a great many cases of constipation in children, for if the child's bowels do not act well the mother immediately repeats the dose. When a constipated baby is brought to the clinic one almost invariably finds that one or more doses of castor oil have been given. A safe rule to adopt is: Never give castor oil unless there is diarrhoea.

The Food of the Infant: Quantity and Quality.

The quality and quantity of the food require great attention. It is not sufficient that the child gains from 4 to 7 ounces per week, but inquiries should always be made as to the character of the stools. Underfeeding in breast-fed babies is comparatively frequent. This is evidenced in the character of the stool which is small and insufficient. Besides studying the progress in weight the best guide is the test-feed. The baby should be weighed before and after a feed and, if the quantity is too little, there should be no hesitation in supplementing the feeds with artificial feeding. It is much better to give small quantities of milk after each feed than to replace one or two feeds by a bottle-feed. In this way the natural stimulus of sucking is not interfered with.

Insufficient fat is liable to produce constipation. This occurs more particularly in cases where cows' milk is too freely diluted. For the first few weeks the child can only with difficulty digest fats other than that of breast-milk. Small amounts in the form of cream, an emulsion, or a compound like virol should be cautiously added. As the feeds are made stronger the tendency to constipation passes off. Too much fat is to be avoided, and if the stools become pasty and greasy the quantity should be reduced or even temporarily stopped. If it should be a case of faulty fat digestion some pancreatic extract should be given.

When curds appear in the stool these should be examined to find if they are really composed of undigested milk, as very frequently they consist of small rolls of dried mucus from an insufficiently lubricated bowel. If found to be the former, humanised milk or citrated milk should be given; if the latter, an emulsion of liquid paraffin should be employed as a lubricant.

In bottle-fed babies, as in breast-fed, the appropriate quantity of feed should be regulated according to the weight-chart and the amount of the stool. If the gain does not amount to at least 4 ounces in the week and the stool is too small an increase in the feed is required.

Overfeeding must be guarded against. If a child assimilates its food well, care should be taken that the amount of feed is not too much. The weight-curve will show too great an increase, and although the child may remain in perfectly good condition for some weeks, if diarrhoea does not supervene before, the stools will become too copious, light-coloured, greasy, and lumpy. If this occurs the condition very often corrects itself by keeping to the same quantity of feed for the following week or so.

Other Matters.

Insufficient water is harmful. If the stools become too dry the feed should be further diluted, or the child may be given sips of water between feeds when awake. It is important that the water should first be boiled, as if there is a high degree of temporary hardness it will tend to produce constipation instead of preventing it. The addition of a little fruit juice daily is often of great benefit. Too much water is to be avoided, as with the continued passage of watery stools the bowel in time becomes lazy and will only respond with difficulty when it really has to work. A similar condition results after an attack of acute diarrhoea. It should be remembered that the secretions have become greatly dried up and the musculature of the bowel wall so enfeebled that great care is required in order to avoid chronic mucous colitis or chronic constipation. The tone of the bowel wall should be gradually restored. If simple hygienic measures as outlined do not suffice a bowel tonic should be given, such as a mixture of cascara, nuxvomica, and liquid paraffin. Drugs to increase secretion should be used with great care, for if there is any tendency to chronic mucous colitis the condition may be aggravated.

All mothers should be warned of the danger of the indiscriminate use of soap suppositories. Too often this temporary remedy is resorted to, with the result that after a time the bowels will not move without this stimulus. The normal stimulus of the rectal reflex is the presence of faeces in the rectum, and if soap suppositories are given indefinitely the natural stimulus has no effect.

The prevention of constipation in mentally deficient, cretins, and infantilism is greatly dependent on the early diagnosis of the case. Simple hygienic measures, though helpful, will in all probability be insufficient alone. The early administration of thyroid extract in most cases acts beneficially.

DOUBLE RESECTION OF BOWEL.

FOUR SUCCESSFUL CASES OF GUNSHOT INJURY,
WITH A NOTE ON DOUBLE AND TRIPLE
RESECTIONS.¹BY GORDON TAYLOR, M.A., M.S., B.Sc. LOND.,
F.R.C.S. ENG.,SENIOR ASSISTANT SURGEON, MIDDLESEX HOSPITAL; LATE TEMP.
MAJOR, R.A.M.C.

THE published results of abdominal operations for gunshot injury and conversations with other surgeons at the various casualty clearing stations have given me the impression that double resections of bowel for wounds of gunshot origin are but rarely successful. I have, therefore, been perhaps unduly fortunate with four cases of my own in which a successful result was obtained.

Notes of Cases.

CASE 1. *Perforating wound of abdomen by revolver bullet; double resection of small intestine; pulmonary infarct; recovery.*—Private, admitted into casualty clearing station on Feb. 23rd, 1918, had been shot with a revolver at a distance of a few feet. The wound of entry was in right iliac region, of exit in left iliac fossa; bullet found in clothing. He was in poor condition when placed upon the operating table about five hours after wound; pulse 126.

The abdomen was opened by a paramedian incision; about 2½ pints of blood evacuated from peritoneal cavity. Twelve large wounds of lower jejunum necessitated resection of three feet of small bowel. Four severe wounds of segment of upper jejunum and corresponding mesentery demanded further resection of a foot of intestine, the lower limit being some 20 inches above first junction. End-to-end union in each case. In view of condition of patient and nature of missile, entry and exit wounds were not excised.

The patient made an excellent recovery so far as concerned his bowel injuries, but some deep tenderness on the right side was interpreted as thrombo-phlebitis of deep epigastric vein, probably due to spread of infection from original track of missile in parietes. The diagnosis seemed confirmed by the sudden development of a small pulmonary infarct in lower lobe of left lung on tenth day after operation. Fluid in left pleural cavity was aspirated on three occasions; each time bacteriological findings negative. The whole left lower lobe was now solid, and an alarming intermittent temperature developed; pulse good and appetite unaffected. A "crisis evacuation" on March 21st, 1918, sent him to the base, and he reached England the beginning of April.

An exploring needle now revealed pus; a small empyema was evacuated after resection of portion of ninth rib; tube removed 10 days later. On April 18th he developed a small abscess of abdominal wall in right iliac region; this was opened. The patient was then sent to his native country, Ireland, and after an operation for the repair of a weak abdominal scar by Captain Herbert Crawford, R.A.M.C., of Dublin, he was discharged from the Service.

The exact causation of the thoracic manifestations was rather obscure, as the patient had previously received a severe penetrating wound of the left chest with resulting empyema, which had been very slow to heal. The sudden onset of the symptoms, however, the date after operation on which they appeared, the thrombosed deep epigastric vein, the latent sepsis in the right iliac region which "flared" two months later, the prune-juice expectoration seemed to confirm the view that it was a septic pulmonary infarct.

CASE 2.—*Penetrating wound of abdomen; resection of jejunum; resection of distal part of transverse colon, splenic flexure and descending colon; temporary cecostomy.*—Lance-Corporal, admitted into C.C.S. in the early hours of a February morning. A shell fragment had entered the left flank, completely dividing descending colon and shattering adjacent edges for some distance. In upper jejunum were several large perforations; mesentery also perforated and bleeding. Three feet of jejunum were resected; end-to-end junction. Large rent on posterior aspect of transverse colon, anterior surface just penetrated. Excision of damaged portion of transverse colon, splenic flexure, descending and iliac colon; end-to-end junction between proximal portion of transverse colon and sigmoid flexure. The wound of entry was widely excised and "Carrelled"; temporary cecostomy performed. Apart from massive collapse of lower lobe of left lung and some trouble with laparotomy wound the patient made a good recovery and was evacuated to the base a month later, and later to England.

¹ Being a portion of the Hunterian Lecture delivered at the Royal College of Surgeons of England, Feb. 7th, 1919.

The patient has been invalided from the Service, and is now at work in an office.

CASE 3. *Penetrating wound of abdomen; perforations of jejunum sutured; resection of ileum; resection of sigmoid; temporary cecostomy.*—Private, admitted into C.C.S. in early hours of January morning in 1917 with penetrating wound of abdomen by shell fragment. After resuscitation for two hours the abdomen was opened, and nine or ten perforations of the jejunum were sutured; also a resection of 18 inches of ileum. Four wounds of the sigmoid were found, two on mesenteric border. As the bowel was in a state of infarction the damaged portion of sigmoid was resected; end-to-end junction. The foreign body was removed from the musculature of the left flank; damaged tissue around track of missile widely excised; temporary cecostomy performed. Recovery was uneventful. The cecostomy closed in 10 days, the rectum was then acting satisfactorily. He was evacuated to the base in three weeks, and subsequently went to England.

By a curious coincidence this patient's father had undergone an abdominal operation at my hands in Middlesex Hospital some few years before the war. The patient has now been invalided with a rather weak abdominal wall and has resumed his occupation.

CASE 4. *Penetrating wound of abdomen; hernia of small bowel; wound of bladder; fracture of rib, anterior portion of iliac crest, and pubic bone; double resection of bowel; recovery.*—Private, admitted into C.C.S. on Sept. 18th, 1918. Operation 8½ hours after being hit. Hernia of shattered strangulated small intestine through a wound in the right hypochondrium; about 18 inches of bowel prolapsed. A large piece of shell had then passed down between the internal oblique and transversalis muscles on the right side, and had shattered the anterior part of the crest of the ilium. Thence its course was deflected again into the peritoneal cavity, and it had become impacted in the posterior surface of the right pubic bone, transfixing the bladder and impaling a coil of ileum against that bone. A considerable pull was required to dislodge the projectile.

The patient, when placed upon the operating table, had a surprisingly good pulse of 96. On enlarging entry wound, releasing constriction of neck of prolapsed bowel, pulse at once rose to 130. The wound was filthy, and parietes and bowel alike were covered with grease and dirt. Four feet of badly damaged and perforated jejunum were resected, and the other coils of jejunum and upper ileum were assiduously cleansed of grease and clothing. The coil of lower ileum impaled against the pubic bone was gangrenous; resection of 2½ feet. The posterior wall of the bladder was sutured; glove drain passed down into cave of Retzius towards wound on anterior vesical surface. Very wide excision of the damaged abdominal muscles was performed after closing peritoneum; a defect in the latter was filled in by a graft of fascia from anterior layer of sheath of rectus. The anterior end of crest of ilium was widely excised. The wound was packed with gauze soaked in flavine; frequent instillations with flavine through Carrel's tubes. 900 c.cm. of blood were transfused by Captain G. R. B. Purce, M.C.; usual resuscitatory measures. The gauze and Carrel's tubes were removed on the fifth day, and skin wound sutured. He was evacuated to the base on the fourteenth day, and subsequently to England.

This case is of interest (1) as a successful double intestinal resection; (2) as a case of prolapsed bowel; and (3) the injury was produced by a missile weighing 3 oz.

Remarks.

The pulse-rate in three of my four successful cases was 126 and over when the patient came to operation; the pulse in the fourth was slower until the wound was enlarged. In Case 1 operation was performed five hours after the patient was hit; in Cases 2 and 3 after six hours, and in Case 4 eight and a half hours had elapsed.

Another successful double resection case comes from No. 17 C.C.S. and is quoted in their paper by Major B. Meyer, M.C., and Major D. O. Taylor, M.C. The patient was 15½ years of age, and he had bowel injuries necessitating a resection of 9 inches of jejunum (a lateral junction being made) and another resection of 4 inches of ileum (end-to-end junction). In addition an isolated rent was sutured. He developed broncho-pneumonia, the wound broke down and required a secondary suture, but he was sent to the base in good condition on the sixteenth day.

Majors J. J. M. Shaw, G. H. Stevenson, and Colin Mackenzie record a successful case of double bowel resection from No. 2 C.C.S. Nineteen perforations of small intestine were found and a double resection with double end-to-end

union was performed; the patient was evacuated to the base in due course.

In the War Museum of the Royal College of Surgeons of England is a specimen of a double resection of bowel which ended happily. My colleague, Major C. H. S. Webb, informs me of a successful case of his own, in which a portion of the ileum and a segment of the transverse colon were resected.

So rare are these successful cases and so insistent are the authors of abdominal papers upon the necessity of refraining from double resection that it seems worthy of note that these cases do indeed survive. In France I had occasion myself to perform 11 double resections of bowel for severe injuries of gunshot origin; four lives were thereby saved. It is hardly necessary to state that these were all cases of very severe intestinal injury and could not have been aided by less drastic measures. Suture has, indeed, been practised in certain of these cases *in addition* to intestinal resection.

Major W. A. Campbell, of Glasgow and No. 37 O.C.S., operating upon a severe case of gunshot injury of the bowel, found it necessary to perform a triple resection of the small intestine; in no case did the resection amount to more than 5 or 6 inches. The patient for 10 days made an absolutely uneventful recovery, so far as his abdomen was concerned; the bowels were moving naturally and freely, and there was no sign of any intestinal paralysis. The weather at the time was cold and damp during the latter part of the advance in the autumn of 1918, and the patient unfortunately developed pneumonia and rapidly succumbed.

I have performed only one triple resection of bowel; the patient was desperately wounded, and it was found necessary to resect 2 feet of upper jejunum, 4½ inches of transverse colon, and the sigmoid. In addition there was a severe wound of the liver and the gall-bladder. Transfusion of blood was carried out, but he died 24 hours later.

I am aware that in civil surgery successful double resections are not remarkable. I have recollections of at least one such case of my own, where a favourable issue followed a double resection for carcinoma, and I have seen my senior colleague, Sir John Bland-Sutton, on several occasions perform double intestinal resections which lived; indeed, he tells me that he has probably had half a dozen such cases successful.

I believe that the high mortality of double bowel resection in war has been due to the serious injuries which necessitated such a severe operation, and that it is unconnected with the operation itself. In no successful case of my own was the post-operative history of the case characterised by any condition of ileus or any intestinal obstructive phenomenon, nor was any such demonstrable in the fatal cases at autopsy. Probably my four successful cases owe most to their own marvellous recuperative powers, and to the devoted attentions of the nursing sisters entrusted with their pre-operative and post-operative treatment.

THE MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of the Mental After-Care Association for Poor Persons Convalescent or Recovered from Institutions for the Insane (Church House, London, S.W. 1) was held on March 12th at the Skinners' Hall, Mr. Stanley Keith being in the chair. The report for the year 1918, read by the chairman of the association, Dr. Henry Rayner, showed that 670 applications had been received during the 12 months, the work having nearly doubled in the past four years. Shell shock and air raids sufferers had been received into the various Cottage Homes, in addition to those discharged from institutions for the treatment of mental disorder. Financial support had been, on the whole, satisfactory; of the total amount received—namely, £2276—£144 were due to legacies and £185 to a special appeal made by the chairman on behalf of the association. In order to keep the receipts up to the level of recent years increased subscriptions would be required. Dr. Norman Moore, in moving the adoption of the report, sketched the various stages in the treatment of mental diseases in England from the earliest known case, that of William Monk Fitchett in 1327, up to the present day, when the treatment of mental disorder had become one of the most efficient and humane branches of the healing profession. Mr. A. H. Trevor, in seconding the adoption of the report, alluded to the great increase in the amount of work done by the association, and the need of a further extension of its sphere of action.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ACUTE ASCENDING MYELITIS.

BY DOUGLAS K. ADAMS, M.A., M.B., CH.B.,
B.SC. GLASG.,

TEMPORARY SURGEON LIEUTENANT, ROYAL NAVY.

THE following case is recorded on account of certain unusual features which it presents.

T. M., aged 21, admitted to hospital on August 13th, 1918, first complained of constipation and malaise on the 8th. Three days later he reported with retention of urine, which had to be relieved by catheterisation. He was accordingly discharged to hospital on August 13th. Patient's previous health had been good, and there was no history or sign of specific disease congenital or acquired, of excess in alcohol or tobacco, or of a recent attack of any acute infection, such as mumps.

On admission patient appeared to be extremely ill, had a temperature of 104° F., and was perspiring profusely.

Nervous system.—There was almost complete loss of power of both lower limbs with absence of the knee-jerks and ankle-jerks. The plantar reflex was flexor on left, occasionally extensor on right. Oppenheim's sign was negative on both sides. No ankle clonus could be elicited. Complete anaesthesia of both lower limbs to superficial and deep stimulation; loss of pain perception. Slight oedema of left foot.

Eyes.—Extrinsic ocular muscles normal. Pupils equal and react to light and to accommodation. Optic discs: right disc—"wooliness" of the margin of disc with signs of early neuritis; left disc—normal. Lateral nystagmus elicited with ease. Mental condition clear.

Cerebro-spinal fluid.—Lumbar puncture performed on admission gave exit to clear fluid under considerable pressure. Examination of a centrifuged specimen showed great excess of small lymphocytes, each microscopic field being packed with cells almost exclusively of this type. No organisms could be detected. No culture could be grown. The cerebro-spinal fluid did not reduce Fehling's solution; there was marked reduction of 0.1 per cent. solution of potassium permanganate. Wassermann reaction of c.s.f. negative.

Circulatory system.—Heart normal. Systolic blood pressure = 96 mm. Hg. Blood: Wassermann reaction negative. Erythrocytes 5,432,000 and white cells 9000 per c.mm.; Hb. 90 per cent. Differential count per cent.: polymorphs, 57; small lymphocytes, 34; large lymphocytes, 8; eosinophils, 0.5; and mast cells, 0.5.

Respiratory system.—No abnormalities detected. Abdomen: No abnormalities detected. Abdominal reflexes present. Spleen normal. Urine: No abnormalities detected. Acute retention of urine and faeces.

The day after admission the zone of anaesthesia had extended to the umbilicus and the following day was two inches above the umbilicus. Superficial abdominal reflexes absent. On August 17th wide dilatation of the right pupil appeared, and patient complained of weakness and tingling in both arms. Triceps, supinator, and wrist-jerks absent. Great impairment of muscular power, but not absolute paralysis. Slight impairment of tactile sensation. No wrist-drop. No paralysis of intercostals or diaphragm. At this stage there was still retention of urine, and constipation was absolute and uninfluenced by medicinal treatment. Six days later retention gave place to incontinence of urine and faeces. In spite of prophylactic measures cystitis developed, and this was followed by the appearance of an inflammatory area over the right trochanter and also by a sacral bed sore of considerable size and depth.

No further complications were observed. The arm symptoms gradually improved and motor power and sensation returned to normal. Sphincter control of bladder and bowel was regained, the cystitis cleared up, and the bed sore healed. The right abdominal reflex returned before the left. Motor power and sensation in the legs were gradually regained. Knee-jerks, at first absent, could be elicited with difficulty and with slight response. A few days later the jerk was exaggerated in excess of normal, more especially on the right. Nystagmus could no longer be elicited.

As to treatment, lumbar puncture was performed on admission. Patient was placed on mercury and iodide, but previous to their administration definite improvement had commenced. Other treatment was simply symptomatic.

Patient was allowed up in a chair on Sept. 30th, and from this date onwards his recovery was rapid. His gait, at first ataxic, soon became normal. By Oct. 15th, 10 weeks subsequent to admission, he was able to walk a distance of four miles, unaided and without fatigue.

Remarks.—The case appears to present difficulties in diagnosis. On admission the symptoms suggested transverse myelitis, possibly of specific origin, and this was adopted as

a provisional working hypothesis. The Wassermann reaction of the cerebro-spinal fluid and of the blood (twice repeated), however, proved negative. This would apparently exclude syphilis as the aetiological factor, for even if the view be adopted that a few remaining spirochaetes might fail to yield a positive result, the infection of the central nervous system was too severe and widespread to be explained on this basis.

It will be noted that there was a well-marked excess of cells of the cerebro-spinal fluid, and that the cells were almost exclusively lymphocytic in character. Lymphocytosis of the cerebro-spinal fluid is typical of subacute and chronic infections of the cerebro-spinal meninges, especially in parenchymatous cerebro-spinal syphilis. It also occurs in mumps and in herpes zoster. In the early stages of acute poliomyelitis lymphocytes are in the majority, as also in the later stages of acute meningitis when recovery has commenced.¹ There is also occasionally an excess of lymphocytes in the cerebro-spinal fluid in cases of cerebral neoplasm.

Landry's paralysis.—The case has certain features in common with this group—viz., ascending motor paralysis. The typical case of Landry's paralysis, however, does not show marked constitutional symptoms or so profound an involvement of sensation and loss of sphincter control.

Acute toxic polyneuritis.—The sensory involvement in the case above described was not limited to glove and stocking areas, the proximal limb muscles were affected as severely as the peripheral muscles and anorexia was extreme. This diagnosis was therefore excluded.

Acute poliomyelitis.—Passive movement of limbs did not produce pain. There was marked sensory loss and the affected muscles did not show atrophy. In these points the case is atypical of acute poliomyelitis.

Subacute combined degeneration.—This was excluded by the subsequent history, the patient rapidly recovering his normal health.

The general facts point towards a fairly acute and widespread invasion, presumably via the blood stream, of the cerebro-spinal nervous system, involving the pyramidal tracts, posterior columns, and optic nerve. The case would appear to be one of acute ascending myelitis, probably infective but not so proved.

TWO CASES OF

INTERMITTENT HYDROPS ARTICULORUM.

BY R. MACLELLAND, M.D. EDIN.,

RESIDENT PHYSICIAN, SMEDLEY'S HYDRO, MATLOCK.

THE comparative rarity of this affection makes the following two cases worthy of publication.

CASE 1.—A female, aged 23, single, complained in November, 1917, of swelling in the right knee which had appeared the previous day. There was discomfort in the joint rather than pain, no redness or heat, practically no tenderness, no fever; the joint was distended with fluid. It was painted with iodine pigment and appeared to be well in three or four days. A day or two later a synovitis of the same character developed and again rapidly subsided. From that time up to April 25th, 1918, when I last heard of her, periodical attacks recurred every tenth day. An attack took three days to develop to a maximum, slowly subsided for five or six days, and then another attack began. Occasionally the fluid completely disappeared before the next attack. At times an attack began on the ninth or eleventh day. There was no history of injury; the only previous illness had been scarlatina years ago. Except for slight passing neurasthenic symptoms a few months before the synovitis began the general health had been excellent. Absolute rest in bed for six weeks, local treatment, lactate of calcium, adrenalin, arsenic, quinine, and other drugs had no appreciable influence on the condition.

In the light of the other case the diagnosis was easy and the prognosis hopeful.

CASE 2.—The patient was under the care of and diagnosed by Dr. G. C. R. Harbison, senior physician here, and I have his kind permission to publish the following notes. The patient, a male, aged 60, from June, 1908, till late spring, 1909, had attacks of synovitis in the left knee, recurring every eleventh day on an average. They were at their height on the third day, and then subsided in three or four days. There was slight tenderness on the inner side of the joint; no acute pain, redness, heat, or fever. Between the attacks movements of the joint were good, and the patient walked about with a stick, only slightly lame. During the earlier attacks

the joint became tensely distended, but later the distension was less. On Dec. 1st, 1908, there was a slight attack in the right knee, lasting four days only. After this date both knees were affected periodically, but not synchronously. After nine months the disease came to an end, leaving the knees well, and there has been no recurrence. No treatment seemed to have any effect. Exercise did not affect the periodicity, but increased the intensity. The general health of the patient was good and there was no organic disease. Previous history: (1) A series of similar attacks, 23 in all, with the same periodicity, beginning in August, 1904, and ending in May, 1905, in complete recovery, the joint remaining well until June, 1908; (2) a history of overflexion of the left knee in November, 1873, while stepping out of a railway carriage, followed by synovitis lasting for eight months, with intermissions, and then ending in complete recovery. There is no history of asthma or angelo-neurotic oedema or Raynaud's disease, and except in 1873 no history of any injury.

SCARLET RED POWDER AS A TISSUE STIMULANT.

BY A. J. TURNER, M.B., B.S. DURH.,
CAPTAIN, R.A.M.C.

THAT toluol-azo-toluol-azo- β -naphthol (scarlet red) has a powerful effect in stimulating the growth of granulation tissue and epithelium is well known. It may, however, be suggestive of new applications of the principle if some of the cases in which it has been used in my practice be mentioned.

Ectropion.—After making a V-shaped incision below the lower lid, sufficiently deep to allow of the lid being freely brought up into its normal position, the two lids were stitched together, scarlet red ointment was applied to the raw surface until granulations had filled up the hiatus and the skin had grown over. The lid was then found to maintain its new position and a scarcely perceptible scar remained. The results in a series of these cases were excellent.

Oriental sore.—My custom has been to scrape these ulcers very thoroughly under chloroform till nothing further could be brought away by the spoon, and then to dress daily with scarlet red ointment. The cavity left by scraping was speedily filled up with granulation tissue to the surrounding level, and when the skin had grown over the scar was quite faint.

Burns.—1. A lady, the back of whose hand had been burnt to the fourth degree and who had neglected it for a week, was treated with applications of scarlet red ointment on lint twice a week for three weeks. The discharge quickly ceased, the green sloughs disappeared, and the septic pits granulated up. When the skin had extended over the surface no scarring was visible and there was no limitation of movement.

2. A Pathan who had been badly burnt about the face some years previously could not open his mouth sufficiently to take solid food. I made several incisions radiating from each corner of the mouth. It was impossible to get the mouth very widely open, as the scar tissue had narrowed the aperture as well as reduced its depth. The furrows produced by the incisions and stretching were dressed with scarlet red ointment; granulation tissue filled them up level with the surrounding areas and prevented any relapse. The final result was that the patient could separate the teeth sufficiently to introduce and masticate small quantities of solid food.

Vesico-perineal sinuses.—A Punjabi came to me in Dera Ismael Khan. He had no less than six sinuses by which urine dribbled away. He was very miserable and greatly debilitated. An indiarubber catheter was tied into the urethra. A piece of gauze impregnated with scarlet red ointment was introduced daily into the whole length of each sinus. After a few days this was omitted, as it was very difficult to insert even a very narrow piece of gauze. The sinuses closed up and recovery was perfect.

Corneal ulcers.—I have used the ointment with success for these.

Wound cavities.—In open wounds with considerable loss of tissue I have found an antiseptic paste containing scarlet red powder prevent ugly scarring and crippling contractions, where the latter were not due to nerve lesions.

With regard to the strength of the ointment employed, I began with one of 8 per cent. on alternate days, but subsequently found that 2 gr. to the ounce of Vaseline, applied daily, was equally effective, and I have never had occasion to revert to the stronger preparation. Where it is desired merely to hasten the growth of epithelium a very successful method is to apply the ointment for two days and then apply a daily hot fomentation for four days, these alternations to be repeated as long as necessary.

¹ Purves Stewart: *Diagnosis of Nervous Diseases*, 4th ed., pp. 443, 444.

Medical Societies.

ROYAL SANITARY INSTITUTE.

Conference on Post-War Development Relating to Public Health.

At the Royal Sanitary Institute on March 14th, Dr. L. C. PARKES being in the chair, Dr. N. D. BARDSWELL, M.V.O., opened a discussion on the Public Health Aspect of Tuberculosis. He said that at the Hereford sessional meeting of the Institute in May last, Dr. D. D. Gold reviewed the position of the treatment and certain aspects of the prevention of tuberculosis, and he proposed to take up the theme much as Dr. Gold had left it, considering in greater detail the various measures which had been referred to as matters of experiment. Prevention and cure could not be separated. The object of all administration was the prevention of the disease and the cure of the individual. The first thing to be done was to ameliorate those conditions of faulty environment which predisposed to infection. That the circumstances of the industrial classes should be improved was now recognised as necessary for the future welfare of the country, and when this was done the prospects of recovery of those suffering from the disease would be greatly increased. Social reform was urgently needed. It was not sufficient, however, to deal with predisposing factors alone; there still remained the infective agent, the tubercle bacillus. Infection passed from one person to another, and those suffering from tuberculosis ought to be controlled. This was not being done at the present time. Existing arrangements for the treatment of tuberculosis had met with very small success. In many patients first coming under observation the disease had so far advanced that cure was out of the question; those for whom cure was possible often declined treatment on the ground that if they were deprived of their incomes their dependents would suffer, while the incompletely cured consumptive could not compete in the ordinary labour market; finally, the whole working conditions of many patients were such as to destroy all hope of cure. In regard to diagnosis the public ought to be better informed, the general practitioner should make greater use of the skilled tuberculosis officer, and a more liberal scale of sickness benefit should be allotted. In factories suspected cases should be selected for diagnosis. Care committees could not secure proper housing or suitable employment for their patients if neither were available. After-care at the present moment was merely palliative and in some parts of the country did not exist.

Colonies for the Tuberculous.

Experience at present showed that the life of the consumptive worker who was compelled to live in a city might be prolonged by treatment, but, generally speaking, his cure as a working unit was an impossibility. Any measure which was likely to succeed must include the removal of the patient from an unsuitable to a suitable environment. That was the principle underlying the modern idea of colonies, as planned by Professor Sims Woodhead and Mr. Varrier-Jones. Such colonies admitted patients suffering from all degrees and forms of tuberculosis, workshops were provided under expert guidance, so that the patients could be taught trades, and it was hoped that many after a prolonged sojourn would be discharged in good health and subsequently follow their newly-acquired occupation. Permanent settlement was encouraged and cottage accommodation provided for those with families. Generally speaking, it was hoped that consumptive patients would be induced to live under healthy conditions where supervision could be exercised, so that their prospects of recovery and of becoming productive units of society would be greatly increased.

It was impossible as yet to judge how far the principle could be extended. Several sanatoriums had dealt satisfactorily with the problem of employing patients by absorbing them into the personnel of the institution, but obviously what could be done for 40 or 50 people would be impossible for perhaps tens of thousands. Attempts

had been made to establish trades for consumptives, and it was to be deplored that the support of public authorities was lacking. Industries staffed by tuberculous labour required substantial subsidies, but such subsidies would in the end prove economical. Other points which had to be considered were the size to which the colony could grow and still remain a manageable unit, the employment of dependents and provision for their education, and the preservation of discipline and enforcement of hygienic rules both for patients and their healthy relatives.

Difficulties occurred with Friendly Societies on the question of sick benefit for consumptives employed in remunerative work. Nevertheless, a scheme of this sort presented such enormous possibilities that funds should be forthcoming to permit the undertaking of experiments of this kind. The present was a favourable time for such experiments, as there were thousands of ex-service men in the country who would be able to enter the colony free from anxiety with regard to their dependents and retain the wages they earned, which varied from 30s. to 12s. a week. If these men, however, had the grit to go to a colony and learn a trade, their pensions should not be reduced. A reduction of pension was detrimental to men seeking treatment, and they often refused treatment on these grounds. A tuberculous person, so long as he was a tuberculous person, should have the full rate of pension.

Sanatorium Factories.

With regard to introducing some of the colony principles into city life, Dr. Bardswell thought that it should be possible to introduce sanatorium workshops under the direction of the tuberculosis officer. The small wage which the patient earned, in addition to that of his wife and children, would keep the family above the poverty line. If these men worked in crowded factories they formed centres of infection for others. It had been suggested that trade-unions should set up workshops for their consumptive members, but the establishment of sanatorium workshops was only possible where one or two trades were carried on in particular areas—in a bootmaking centre, for example. Labour officials did not approve of subsidised labour. The idea of such factories was not new, for in New York a sanatorium factory had been run for the past two years chiefly in connexion with the clothing industry. The wages earned cancelled the sum which in previous years the society had paid to dependents and in the sustenance of patients. Why should England be behind America? Something should be done in the way of organising home employment, and it ought not to be impossible to devise some means of distributing work to consumptives and so prevent them working with their fellow men. The moral value of work for a consumptive was extraordinary, but it was important that he should not regard himself as working for the sanatorium. He should be shown clearly that the work is for his benefit and the money earned should go into his own pocket.

It was useless to introduce colony ideas into city life in order to control consumptives during the day-time if they re-entered the slums at night, and perhaps slept four in a bed, but housing would come in time to remedy that state of things. For such patients after-care funds should pay the difference between a miserable and a suitable house, and every public health authority should have the disposal of a certain number of beds which would be available for working men of good character, who would thus be given every chance of getting well. In Paris, in connexion with a dispensary, they had hospitals where patients with bad homes could be provided with a bed at a very small fee. Such hospitals ought to have a communal kitchen in connexion with them, where the patient could get a good breakfast before going out in the morning. Throughout the country and in London the lack of adequate institutional accommodation for cases of advanced disease was a most serious blot on our administration. Sanatoriums were quite unsuited for such cases, and there was a great dislike on the part of the people to Poor-law institutions; they would put up with the most appalling conditions rather than go into the workhouse infirmaries.

Discussion.

Mrs. HANDL BOOTH, speaking from the purely social side of the work, and from a large experience inside the homes

of the people as well as of sanatoriums, said that she was more than ever convinced that a great deal of the money spent in large towns on sanatorium treatment was wasted. The patient returned home looking very well and felt anxious to work, but in two or three months he broke down and went on the funds of the Approved Societies. If sanatorium treatment in this country was to be efficient something more drastic would have to be done. More coördination was required between members of the medical profession, and more human interest in the individual case. The incidence of tuberculosis had increased under war conditions. Propaganda among the working classes was needed, for they did not seem to realise at all that consumption was in any way infectious. Practically nothing was done in the majority of homes to prevent infection spreading amongst other members of the family, and sometimes the accommodation was such that it was not possible to take proper care of the patients in the home. There ought to be larger powers under the Local Government Board to segregate infectious patients. There was no reason why arrangements could not be made to convert the workhouses that had been used for our soldiers during the war into hospitals for consumptive patients in whom the disease was advanced. A large number of manufacturers were willing to give home employment, but the public objected to buying goods made by consumptives. To make this a commercial success a Government subsidy was necessary. Some method of compulsion should be adopted for segregating consumptives, otherwise the fringe of the subject only would be dealt with.

Dr. H. CARDALE (chairman of the London Panel Committee), speaking on the housing problem, said that before better environment was provided it would be necessary to educate the people. The practitioner had an important duty to perform in this respect, but he could not perform it in the best way. This was not so much his fault as that of his educators. Those responsible for his education should lay at least as much stress on the prevention of disease as on its cure. The health of the child could not be built up at too early an age. If more attention were paid to this question a larger amount of tuberculosis would be prevented. An extension of the valuable work of the Children's Country Holidays Fund would do a vast amount of good by preventing the development of tuberculosis. He agreed that more coördination between the various branches of the medical profession was needed. In the vast majority of instances the early cases of consumption came to the general practitioner, who had been blamed for not being sufficiently alert in the detection of such cases. But when he had detected them he had the greatest difficulty in persuading the patient that there was anything seriously the matter with him.

Dr. R. M. F. PICKEN (Assistant M.O.H. Glasgow) said that with regard to early diagnosis a specialised tuberculosis officer was more or less undesirable. The dispensary should be a consultative place, and a specialist was here necessary who should be in touch with every side of disease, as there was a tendency to diagnose tuberculosis when the patient was suffering from something else. At the present time the number of consumptives requiring segregation was probably very small.

Councillor LANSBY (Lanarkshire) thought the housing conditions had very much to do with the spread of disease.

Views of Other Speakers.

Professor SIMS WOODHEAD said the lecturer had been able to stimulate a large number of people to make advances along scientific lines. He felt that in the treatment of this very serious problem we were not courageous enough. It had been said that we wasted a good deal of money on sanatoriums, but we had to realise that at the outset the sanatorium was an experiment. It arose on the open-air treatment principle—a good and sound one—and although money had been apparently wasted on it, it had opened the way for further advance. The spending of the money would be justified in future. We had to take tuberculosis as we found it and not expect that patients in different stages of the disease would be made for us to order. The disease would either advance or the patients recover, and if we were going to carry them about the country in order exactly to fit them into places prepared for them a large number of expensive institutions would be required. The patient must be attracted and

made to see that it was to his advantage to go into an institution. He had first to realise that he was suffering from a disease and that under certain conditions he would be capable of living a useful life for a considerable period of time. Pensions should not be taken away because he was earning a small sum of money. The fact that he was earning made a great difference in prognosis.

Mr. WALKER (North Wales) said the matter required to be investigated in a more serious spirit and the people must be educated. A man had no more right to be carrying tuberculosis through the land than he had to wander about the country if he were insane. The tuberculosis patient should be controlled.

Dr. F. G. CALEY (Tuberculosis Officer, Wandsworth) said that after four years' absence he had returned to find that the dispensary sanatorium as it existed now was very disappointing. Tuberculosis was an infectious disease, and we were dealing with it as though it were non-infectious. Colonies must be made attractive. It was the system of the future, and we had to adopt it if we wished to get rid of the disease.

Dr. D. C. KIRKHOPE (M.O.H. Tottenham) said that housing alone would not solve the problem of consumption. Isolation was needed.

Dr. S. G. MOORE (M.O.H. Huddersfield) thought that earlier notification was required and the Local Government Board ought to have returns showing the average duration of the disease at the date of notification. The only chance of restoring a consumptive patient to useful working capacity was that treatment should be undertaken while there was sufficient lung tissue present for normal life to be carried on. When the disease was advanced there was an actual destruction of lung tissues which arrested every effort to rehabilitate the man.

Mrs. KEEN (Papworth Colony Committee) thought that segregation should not be compulsory, but made attractive and gradually adopted. Such centres as those at Papworth were required in all parts of the country.

Councillor LONDON (Manchester) believed that effective propaganda work among the public was necessary. The main cause of the generation of consumption lay in the habits of the people. In Manchester industrial conditions disposed to consumption, which was followed by a great loss of money and productive power. Consumption should be treated in the same way as other infective diseases, and where isolation was not possible in the home a patient should be sent to an institution, compulsion being used if necessary.

Dr. BARDSWELL, in his reply, said he was glad to see so many interests represented, and that the general feeling of the meeting showed that there was a desire for something more to be done with regard to the treatment and prevention of this disease. Professor Sims Woodhead had struck the right note when he expressed the opinion that experiment must be extended. A general wish for segregation had been expressed, but he thought it should be done by attracting the patients and not by compulsion. Such an enthusiastic congress as the present one would have been impossible a quarter of a century ago owing to lack of interest, and he regarded the present meeting as an indication of the earnest intention of the country to deal with the matter on a more comprehensive basis.

LONDON ASSOCIATION OF MEDICAL WOMEN.—A meeting was held on March 11th, at 11, Chandos-street, when Lady Barrett, the President, showed a case of Deficiency of the Pituitary Body in a girl aged 19. The patient had primary amenorrhoea, and on examination was found to have a very small, undeveloped uterus. She had no thyroid deficiency, and was well developed except in the size of the skull. The circumference was 19 inches, the occipito-frontal measurement was 6½ inches, and the transverse was 5 inches. A skiagram showed a very small pituitary fossa with the anterior part especially undeveloped.—Dr. Rhoda Adamson opened a discussion upon the Effect of Industrial Employment upon Women. She spoke from experience as medical officer for seven years to a maternity hospital, most of the patients having been factory workers before marriage, and many of them charwomen afterwards. She also spoke from the point of view of three years' supervision of some thousands of women in engineering work, most of whom were wives of men in the Navy, Army, or Air Force. She emphasised the need of grading by a doctor with opportunities of seeing the

different kinds of work, and the importance of giving suitable work to pregnant women, who should be taken off all night work and all work involving sudden strain. She found that the children born under these conditions were as healthy as those whose mothers did no outside work. An interesting point was brought out in the fact that out of 4000 women doing heavy work only two developed hernia. On the whole, Dr. Adamson found that industrial work was good for women, and that some who had never gone out to work before brightened up mentally, developed hobbies, and improved in health.—Dr. Janet M. Campbell spoke of some of the effects of munition work on women. She said that industrial occupations were less injurious to women than to men, and that they were less liable to accident, but that women suffered more from overstrain, 50 lb. being the maximum weight which it was found advisable for most of them to handle. She said that the tuberculosis rate had risen since the war in the case of urban females, probably owing to the entrance of more women into conditions which had previously accounted for the greater incidence in urban males. The greater incidence of sickness among working women must be attributed to poverty, lack of fresh air, long standing, and improper food. In munitions work, the results upon health were found to be good owing to good wages, healthy conditions, and welfare supervision. Dr. Campbell said that the results showed that light sedentary work was by no means best, and that many women would have better health if they followed more active occupations.—Dr. Josephine L. D. Fairfield spoke from her experience in the Q.M.A.A.C. and W.R.A.F., and referred to the great value of grading for work. She attributed the higher sickness rate in women to the strain of household management being added to that of outside work, and said that women suffered more from lack of a good mid-day meal and good ventilation, and stood continued strain and "dope" less well than men. In her opinion the unreliability of the health of women about the age of 40 was chiefly due to want of care at childbirth, and to chronic toxæmia due to dental disease, and both of these causes should be prevented. She said that no industrial work was harder than a woman's work in a poor home, with all the washing and cleaning and half-a-dozen children to mind.—Dr. Cicely M. Peake spoke of her experience in the Q.M.A.A.C. She said that as women had less muscular power and less leverage owing to less height there was a need of adapting machinery to their use.—Dr. Pillman Williams gave some interesting statistics in reference to her three years' work in a filling factory where 9000 girls were employed. She found that the sickness rate in one section went down when night work was stopped from 24.2 per cent. to 20.24 per cent. per week.

LIVERPOOL MEDICAL INSTITUTION.—At a pathological meeting held on Feb. 13th, Mr. Thelwall Thomas, the President, in the chair, Dr. J. P. McGowan read a preliminary note on Mutation of Organisms of the Coliform-typhoid Groups. Several cultures of a paratyphoid-like non-lactose-fermenting organism grown on ordinary agar subcultures infrequently and kept in the dark at room temperature were found after two to three years to have mutated into lactose-fermenting coli-like organisms. The converse also occurred, but much less frequently. The same change was brought about in a few days by a particular method of passage through the body of an animal.—Professor J. M. Beattie read a paper on the Diagnostic Value of the Wassermann Reaction in Syphilis. He claimed that the test, when carried out with a full and accurate technique, was of extreme value, and referred to the very consistent results obtained by three experienced workers selected at the instance of the Medical Research Committee. The results in 1000 cases were analysed, and it was shown that negative results could in almost every case be reconciled with the history of the cases, treatment, &c., and that in positive cases the clinical and serological diagnosis almost invariably agreed. In clinically obvious cases—e.g., chancres, condylomata, gummata—every negative result could be satisfactorily explained by the cases being either very early ones, fully treated or undergoing treatment at the time the test was done. In other cases where dependence had to be placed on a very imperfect history the agreement between clinical diagnosis and serological was not so close, but there was sufficient agreement to justify the opinion that the reaction was of the greatest value.

TUBERCULOSIS SOCIETY.—The address on Acute Pneumonic Tuberculosis will be delivered by Sir William Osler on April 28th at 8.30 P.M., and not, as announced, on March 24th. In its place Dr. Halliday Sutherland will open a discussion on Tuberculosis Officers and Panel Practitioners on March 24th at 8.30 P.M. at the Royal Society of Medicine. Discussion at this meeting is open to all members of the medical profession.

Reviews and Notices of Books.

Röntgen Diagnosis of Diseases of the Head. By Dr. ARTHUR SCHULLER, Head of the Clinic for Nervous Diseases at the Franz-Joseph Ambulatorium, Vienna. Translated by FRED F. STOCKING, M.D., with a Foreword by ERNEST SACHS, M.D., Associate Professor of Surgery in Washington University. London: Henry Kimpton. 1918. Pp. 306. 21s.

THIS is a valuable and important contribution to the study of craniology, and while appealing specially to surgeons and radiologists it will prove helpful to the physician. The X ray investigation of the head demands the highest degree of perfection in equipment and in technique, and the subsequent interpretation of the plates is attended with unusual difficulties. In addition, opportunities for subsequently ascertaining the correctness, or otherwise, of the X ray findings are not always obtainable, so that it is scarcely to be wondered at that the subject has been of slow development. In collecting the necessary material for a work of this kind the author seems to have been very fortunately placed, and he has succeeded in giving us a thoroughly systematic treatise that is certain to exercise a profound influence on the investigation of cranial lesions.

The author is careful to point out that radiography is only an addition to existing methods, though its possibilities are much greater than is usually supposed. The basis of the whole subject lies in the fact that intracranial diseases are so frequently associated with changes in the bones of the skull, and it is the purpose of this work to study these changes from which so much valuable evidence is to be obtained. After a consideration of the normal skull at various ages and in different varieties, Chapter II. treats of the irregularities in development following disturbances in the growth of the skeleton, changes in the structure of the bone and injuries to the skull. Chapter III., in addition to pathologic changes in the brain that can be shown directly radiographically, deals with the changes in the skull produced by intracranial pressure, tumours, epilepsy, migraine, and psychoses.

Very properly the author advocates the use of stereoscopic plates in all cases. Numerous radiographs are reproduced to illustrate the text, and each is accompanied with a line drawing that makes the interpretation quite clear. We would draw special attention to the section relating to changes in the sella turcica, which is most complete. The author handles his subject in a way that is entertaining as well as instructive, and it is to be hoped the work will receive the attention it deserves.

Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods. By REGINALD HAYES, M.R.C.S. Third edition, revised. London: Baillière, Tindall and Cox. 1919. Pp. 92. 4s. 6d. net.

IN the third edition of his brief study of Aix-la-Chapelle methods the author recommends, as the result of further experience, shorter intervals between the salvarsan injections. The illustrative cases have been brought up to date, and illustrations have been added to show the position assumed by patient and rubber during treatment.

The Whole Duty of the Regimental Medical Officer. By Captain P. WOOD, R.A.M.C. London: Forster, Groom, and Co., Ltd. 1919. Pp. 78. 2s. 6d.

THIS little book contains a series of maxims which should be taken in by the embryo regimental medical officer. It does not pretend to be more than a first-aid in sanitation and prevention of disease in the field. The duty of the medical officer to the State, to his unit, and himself is dealt with. Certain criticisms of existing conditions as they appealed to the author are worthy of consideration. This officer, who has served in Salonika, describes a successful scheme for dealing with cases of malaria, amongst a variety of other routine duties. No doubt if the book had appeared a little earlier it would have been of service, and there is no reason why it should not be so now for those stationed in similar climes.

Manual of Bacteriology. By ROBERT MUIR, M.D. Edin., F.R.S., Professor of Pathology, University of Glasgow; and JAMES RITCHIE, M.D. Edin., Irvine Professor of Bacteriology, University of Edinburgh. Seventh edition, with 200 illustrations in the text and six coloured plates. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 753. 16s.

THE war has stamped itself indelibly on medicine and the ancillary sciences. New diseases have appeared and their ætiology has been investigated, and in some cases solved, while on the other hand many subjects on which our information was still incomplete have passed, under the exceptional conditions of the war, into the region of definitely acquired knowledge. As the last edition of this excellent text-book, undoubtedly one of the best for the purpose of the medical student and practitioner, was produced in 1913 the new edition naturally reflects this war influence, though the additions made are by no means confined to those sections which are concerned with diseases which have been specially prominent during the war. As with former editions, there has been a thorough revision of the book and the new material is not simply added to but incorporated with the old, so that this latter is modified by the knowledge subsequently obtained. By pursuing this sound but troublesome method the authors are able to assimilate all the really important new material available without unduly enlarging the book.

Dealing first with the war subjects, the section on cerebro-spinal fever has been revised and the chapters treating of the enteric group of diseases, including the amoebic as well as the bacillary, form of dysentery, have been rearranged and extended. More attention has naturally also been given to the important group of anaerobic organisms which were associated with the grave complications of wounds, and there are corresponding additions to the methods of anaerobic culture. For the first time sections deal with the spirochæte of infectious jaundice and the allied spirochæte of rat-bite fever. The information on trench fever has been epitomised from the reports of the English and American Committees, and the important pioneer work of McNee and Renshaw is duly appreciated.

In matters not directly arising out of the war, the chapter on pneumonia now contains the American work on the differentiation of pneumococci, with its practical bearing on treatment. The organisms found in actinomycosis are definitely described as belonging to three distinct main groups—ærobic, anaerobic, and actinobacillary. Poliomyelitis is treated at considerably greater length and Rosenow's theory as to its origin discussed, while a section on epidemic encephalitis has been added. The chapter on influenza will require attention in the next edition; blood-smear agar is still described as the most suitable medium for culture of the organism. Other modifications too numerous to mention have been made, but all with good intent and result.

The number of illustrations has been increased, and the additions include several of anaerobic organisms, the new spirochætes, and one figure of the organisms found in Vincent's angina. The misdescription of one of the malarial plates has now been altered. The general appearance of the book remains as in former editions, and though one or two typographical errors have crept in, the printing and paper, considering present conditions, are very satisfactory.

Tropical Surgery and Diseases of the Far East. By JOHN R. McDILL, M.D., F.A.C.S. London: Henry Kimpton. 1918. Pp. 302. 24s.

THE title of this book hardly conveys an idea of its peculiarities. It is not a humdrum text-book, as witness the following passage:—

"There are no dangerous wild beasts (in the Philippines) except the wild Carabao or winter buffalo, which, when hostile, has no match for ferocity; one must either kill him or take to a tree, and that forthwith, or be killed, for although weighing about a ton, he is as quick as a tiger."

It is curious to find "calabar swellings" in a book dealing with the Far East and no mention of *Schistosomum japonicum*, or, more remarkable still, of ancylostomiasis or sprue. But although the plan of the book is hard to discover yet it contains some valuable matter. The surgical portions are interesting, the operation for liver abscess being

clearly depicted by good photographs. Indeed, it is a merit of the latter that the majority do show what they are stated to do and are not smudges. About 100 pages are devoted to the replies to a "questionnaire" sent out by the author in 1911. What the questions were is not stated, and how far the replies are of value it is difficult to judge, but at any rate they afford evidence of the diseases that a medical man is confronted with and of the material awaiting the research worker. An appendix of 40 pages deals with the surgery of the spleen.

Modern Urology. Edited by HUGH CABOT, M.D., F.R.C.S. Philadelphia and New York: Lea and Febiger. 1918. Vol. I., pp. 744. Vol. II., pp. 708. \$14.

THIS book consists of a collection of monographs written by some 30 American authors, each of whom has a world-wide reputation, and is a master of the particular section with which he has to deal. The editor is to be congratulated in having obtained such a combination of men to help him to send forth into the surgical world the views of American genito-urinary surgeons relative to the science of urology. It is only natural that the excellence of the various articles should vary considerably, and it is not to be wondered at that there is a good deal of overlapping, leading in some cases to widely varying opinions of theoretical character which at times lead to confusion. On the whole, however, it is a good book and redounds greatly to the credit of the editor. An attempt has been made to ensure that each article is complete as regards points of historical interest, pathology, diagnosis, and treatment. In some instances elaborate discussions are made when there is a difference of opinion as to the theoretical origin of certain conditions, many of which are stimulating and demonstrate well-balanced coördination on the part of the authors.

We do not attempt to single out for praise particular articles amongst so many to which the names of men of world-wide repute are attached; it is sufficient to say that the high standard of accomplishment which might have been expected has been obtained. One interesting feature is the prefacing of the book by an historical account of the rise of genito-urinary surgery in America, with a short life-history of the important men who have raised it to its present high standard. It is a little disconcerting to find that so little credit is given to surgeons in this country in aiding this progress.

The drawings, photographs, X ray photographs, anatomical and pathological illustrations and coloured prints are excellent both in their number and reproduction. Especially is this the case of the coloured cystoscopic views, which are numerous and representative. The book also contains a good bibliography. As a record of theoretical and practical genito-urinary surgery, as observed from the American point of view, there can be no doubt that the editor has produced a notable addition to literature and one which will remain for a long period the best available authority.

The Science and Art of Deep Breathing. By SHOZABURO OTABE, M.D. Basle. London: John Bale, Sons, and Danielsson, Ltd. 1919. Pp. 114. 5s.

IN this little book the author strongly urges the practice of deep breathing for ten minutes every morning and evening as a preventive against consumption and other diseases. He ascribes the salutary effect produced, not so much to the inhaling of an increased amount of oxygen as to the changes produced alternately in thoracic and abdominal pressure. During deep inspiration the thoracic pressure decreases and the abdominal pressure increases:—

"Hence the blood circulating in the abdominal cavity flows into the thorax with greater rapidity, and the blood circulation in the abdominal organs becomes very rapid. During deep expiration, when the abdominal pressure decreases, the thoracic pressure increases, and the blood which was drawn up into the thorax during inspiration flows back again into the abdominal cavity with great speed. In this manner the nerve function and blood circulation in the abdominal organs are strengthened by deep breathing, and the physiological activity of these organs increases."

The author does not recommend the method if the disease is in an advanced stage, if there is hæmoptysis or severe cough, or if the temperature is over 100° F. Method and its rationale are described in detail.

Electro-Diagnosis in War. (One of the series of Military Medical Manuals issued under the general editorship of Sir ALFRED KEOGH, G.C.B., and Lieutenant-General T. H. J. C. GOODWIN, C.B., C.M.G., D.S.O.) By A. ZIMMERN, Professor Agrégé of the Faculty of Paris; and PIERRE PEROL, formerly Intern of the hospitals of Paris. Edited with a Preface by E. P. CUMBERBATCH, M.A., M.R.C.P., Medical Officer in Charge of Electrical Department, St. Bartholomew's Hospital, &c. London: University of London Press, Ltd. 1918. Pp. 212. 7s. 6d.

ELECTRICAL testing is one of those several subjects that have suffered much at the hands of their friends, and unfortunately claims prompted by early enthusiasm frequently lead to a prolonged stalling in the development of a new line of investigation; this undesirable state is accentuated in the case of a subject that is both highly technical and difficult. This volume should do much to place electrical testing in its proper place among other methods of clinical investigation. The authors are at some pains to show that the method is only an accessory to others, though at times an indispensable one. They further show that electrical testing has not failed in any given case simply because it has been gone over by someone armed with a faradic coil. Profound knowledge and extensive experience are required before the proper technique can be carried out and correctly interpreted, and the authors emphasise the necessity for repeated tests since abnormal reactions are not permanent but vary from week to week or month to month. An important contribution is an electrical method of testing cutaneous sensation in which the stimulus is measured and can be repeated on subsequent occasions. There are other methods of equal importance, making the work the most complete account that has yet appeared of the uses of electrical methods in the investigation of paralysis occurring in war and in peace.

JOURNALS.

Medical Quarterly. Vol. I., No. 1, January, 1919. Department of Soldiers' Civil Re-establishment, Canada.—The aim of this new journal is to disseminate medical knowledge of a general nature as applied to the rehabilitation of the ex-soldier, not only as it affects his physical condition, but his mental attitude towards social and economic life. The number includes three papers on tuberculosis and a paper on an outbreak of influenza at a sanatorium.—Dr. J. H. Holbrook points out that the extent of fibrosed lung in discharged men should be taken more fully into account by the Pension Boards: with a pension of only \$10 a month the man is tempted to exceed his working capacity and breaks down. In men who have been gassed he has observed that it takes very little exertion to manifest shortness of breath; the men readjust themselves to their disability, but if they are not dealt with very generously during the readjustment period, not on the basis of actual disease but on the basis of fibrosis, they will run great risk of repeated breakdowns. He suggests that the Canadian Red Cross Society should, as in the United States, lend their assistance to antituberculosis organisations.—Captain A. T. Bond, C.A.M.C., considers that the pensions of men with consumption, a disease so liable to relapse, should be fixed every six months; the evil of overwork must be prevented by sufficient pension.—Lieutenant-Colonel J. L. Biggar, one of the co-editors, writes an interesting summary of recent articles on war neuroses; each of the authors quoted appear to have invented a different set of terms; the general conclusion, however, seems to be that the neuroses arise as the result of the mental strife between the emotion of fear and the men's "higher selves." As a result of the mental strain thus set up the patient becomes hyper-suggestible.—Dr. C. B. Farrar describes the arrangements made for dealing with Canadian soldiers discharged with nervous and mental disorders. He considers with a careful and judicious elimination of recruits with a definite psychotic history or potential the number of psychoses among returned soldiers might have been reduced by at least a half.—In a paper on the medical services of the department Lieutenant-Colonel F. McKelvey Bell, the other co-editor, points out that wherever possible the vocational medical officer should have some knowledge of the various industries in which the men are about to engage. "It is a matter of considerable difficulty for the average physician to estimate just what disabilities or diseases preclude the various occupations, but experience in this branch is being rapidly gained by the physicians who have undertaken this important and interesting phase of the work of rehabilitation." Reports from these physicians on this branch of the work would be very valuable; so important are they that we would suggest that the

department should require periodic returns showing the work found suitable and unsuitable for men with various defects.

The American Review of Tuberculosis. Baltimore: National Association for the Study and Prevention of Tuberculosis. 35 cents.—The November number is mainly devoted to the complement-fixation test, the first four papers dealing with various aspects of this test. The verdicts passed on it are not unanimous. Dr. Lawrason Brown and Dr. S. A. Petroff, for example, with a material of 540 cases, conclude that this test is of value to the clinician, and, like the subcutaneous tuberculin test, is more instructive when it is negative than when it is positive. Dr. B. Stivelman, on the other hand, concludes his paper with the judgment that this test, when negative, does not exclude clinical tuberculosis, and, when positive, does not necessarily indicate the presence of clinical tuberculosis. In fact, it gives no better information than the subcutaneous tuberculin test.—Dr. H. Kennon Dunham's paper on the X ray examination of the chest contains much useful information, and is a plea for the more extensive employment of the stereoscopic principle.

The Military Surgeon (Washington, D.C., U.S.A.) for November has a note by Surgeon Chas. E. Riggs, of the Medical Corps, U.S. Navy, telling of eight cases of small-pox which occurred in U.S. ships on their China station between August, 1917, and April, 1918. Half of them were severe cases and fatal, half were slight. It is doubtful if the first case had been recently vaccinated. There is a history of vaccination and recent vaccination in all of them, but it seems that in the United States a single vaccination scar satisfies everyone, but it does not appear to secure immunity, or did not in these cases, which support the English practice of four vaccine marks at each vaccination. It is difficult to understand the table of relation of dates of vaccination and outbreak of small-pox, until it has been recognised that 9.4.17 is not intended to mean 9th April, 1917, as one expects, but 4th September, 1917.—Major Sidney J. Myers gives an account of a convalescent camp for 800 patients in Kentucky, a camp to reside in which was meant to be both a pleasure and a profit. The patients received have been in the base hospital adjacent and are getting well. They have no temperatures, and are able to walk from their wards to the mess-house. No infectious cases are transferred nor any wanting special diets. On admission patients are classified in four groups: (1) resting, who go to lectures only; (2) light exercise, who go short walks, &c., always accompanied by a medical officer and ambulance; (3) drill group; (4) reconstruction group, who have just not passed into the Army but can be made fit by a couple of months' physical training. All duties are voluntary, but by nearly all are eagerly undertaken. Lectures are well attended. There is much material in each barrack to interest the men between times, signalling apparatus, rifles dissected, military maps, and so on. Band concerts are given on holiday afternoons. It is concluded that the time of convalescence lost in ordinary hospitals is here put to profit for teaching hygiene, diseases, military law, and sketching, &c.; 90 per cent. of the patients have taken to the system quite readily, and men go back to duty more quickly this way.

New Inventions.

A "DROP-FOOT" APPLIANCE.

Messrs. Allen and Hanburys, Limited, Wigmore-street, London, W., call our attention to the appliance shown



in the illustration, which has been made by them for the past two years. Their letter is in reference to a similar appliance recently noted in our columns (see THE LANCET, Feb. 15th, p. 284). The appliance can easily be attached to an ordinary boot by means of screws and in certain cases should prove efficient. Pressure over the tendo Achillis would, in our opinion, however, be likely to produce discomfort notwithstanding the fact

that the strap is padded. The intelligent co-operation of the wearer is needed to make any such orthopaedic assistance permanently comfortable. A little ingenuity on the part of the wearer can generally obviate painful pressure, wherever manifested.

THE LANCET.

LONDON: SATURDAY, MARCH 22, 1919.

State Subsidy of Tuberculous Labour.

IN a paper which we publish elsewhere in our columns the author, Mr. P. C. VARRIER-JONES, makes a step forward along a track paved with a dreary mosaic of failures. The first principle he would have us recognise is this: It is not the unfit that become tuberculous, but the tuberculous who become unfit. Hence his concentration on measures to protect the community from the infectious case. His programme may be summed up in the one word segregation, a term for which we devoutly wish there was a kindlier synonym, not suggestive of the leper. Mr. VARRIER-JONES's scheme for segregation is, however, kindly as well as sensible; and, as its workings have already shown at the Papworth Colony, it offers not a prison but a city of refuge to the tuberculous patient. At present the patient with a tuberculous lesion of any gravity cannot successfully compete in the open labour market, and when his services are accepted they are often mercilessly exploited by the employers who reward part-time work with a pittance. According to Mr. VARRIER-JONES's scheme the patient would be delivered alike from the sweating of the thrifty employer and from the doles of the philanthropist, and by a State subsidy would be enabled to continue work under conditions most favourable to himself as well as to the community. As the experiments at Papworth show, this subsidy need not be large. But even a modest subsidy, representing only a fraction of the patient's earned income, may make all the difference. "The little more and how much it is." After all, it is the pace that kills, and the investment which enables the tuberculous to amble happily through life without endangering the lives of others is surely a wise one.

As Dr. NOEL BARDSWELL has pointed out at a meeting of the Faculty of Insurance on Feb. 27th, it may be long before any London authority can be persuaded to establish special communities for the thousands of tuberculous subjects requiring subsidy. We doubt not that he is right. The initial outlay would be too enormous for any public body to take the initiative in incurring it. And were it a matter of philanthropy only, or of mere justice, the realisation of this ideal would probably be postponed indefinitely. Even the argument that it is "good business," an investment that will ultimately pay the community handsome dividends, may fall on deaf ears. But let the taxpayer learn that he is defending himself and his family from a deadly scourge and he will pay readily, if not gladly. The old policy of patchwork, of niggardly doles, is bankrupt. And the more closely it is scrutinised the more does its futility

become evident. But till the community realises that three months' treatment in a sanatorium is but one link in a long chain, the temptation to stop short at forging this one link will be invincible. As matters now stand, sanatoriums are falling into disrepute because the impossible is being demanded of them. The aphorism, "Once tuberculous, always tuberculous," is so true as to be almost a truism. Yet it is, unfortunately, often ignored or forgotten, though a realisation of this elementary fact is essential to the success of any scheme for dealing with tuberculosis. Were this and other essential features of the tuberculosis problem common knowledge, its solution would be comparatively simple. It is impossible to picture statesmen and leaders of the people spending less on a war against bacterial foes than on a war against fellow beings were the facts generally known. If this argument is sound, as we believe it to be, the crying need at present is for a campaign of enlightenment conducted with skill and vigour.

Let us turn from principles and ideals to a scrutiny of facts. Mr. P. ROCKLIFF, president of the Faculty of Insurance, speaking at the meeting on Feb. 27th already referred to, said that the treatment of consumptives on an insurance basis had failed. It may provide residence for a few weeks in a sanatorium; after that the patient returns to his former unhygienic surroundings. Again, the claims of the discharged sailors and soldiers have largely led to the exclusion of the civilian patient from sanatorium accommodation—"an expropriation of other people's money which one would only have expected from a Bolshevik government." In consequence of this state of affairs, Mr. ROCKLIFF assured his audience, the institutional treatment of the insured civilian is not only farcical but tragic. His indictment of Government departments is, no doubt, deserved up to a certain point; but we suspect that they have not monopolised all the sins of omission and commission, and that local authorities are not innocent of the gentle arts of obstruction, reaction, and circumlocution. The public, too, must shoulder some degree of responsibility for evils arising from general ignorance and lack of interest in the public welfare. A perusal of Dr. NOEL BARDSWELL's paper, which we publish in our present issue, on the training colony at Kinson for early cases of tuberculosis, gives the critical reader no rosy illusions. The task undertaken is evidently full of difficulties, some unanticipated. A considerable proportion of the colonists left the settlement before their term had expired. Others, though still in residence, are not expected to be fit enough to become independent smallholders. Twelve months' training, it has been found, is not sufficient save in exceptional cases with previous experience. And what of the marketable value of the patient who has mastered his new profession? Dr. BARDSWELL does not venture any optimistic forecast, and we gather that he has come to the conclusion that this scheme, too, is a link, not a complete chain; and that if permanent success is to be achieved the

training colony must not be satisfied with turning out its inmates to sink or swim in the open market, but must provide sheltered conditions of labour—subsidised labour, in other words. So we come back to the inevitable conclusion: Once tuberculous, always tuberculous. And the scheme that fails to provide for the tuberculous throughout their lives can only be a partial success.

The Progress of Chemistry in 1918.

It is interesting to learn that during the terrible times of war, and despite the depletion of personnel, chemistry, in all its branches, has been able to make advances. The Council of the Chemical Society may be congratulated on the policy which it adopted a few years ago of issuing annual reports of the progress of chemistry. The Society's journal, published monthly, is the medium through which important papers read before the society are communicated to its Fellows, and the abstracts contained in it from contemporary and foreign literature occupy the majority of its pages and cover a wide range of subject matter contributed by a staff of distinguished chemists, physicists, and physiologists. The materials, therefore, from which to compile an annual report are excellent, while the compilation is left in good hands by the selection of a certain number of these abstractors to whom the task of recording the progress of chemistry during successive years has been allotted, and making them responsible for the report.

The progress made in 1918 is of peculiar interest when it is remembered that the shadow of war for most of that period darkened all peaceful scientific effort. Enough emerges from the report to show that while the part played by chemistry in the war was of supreme importance, problems have also been solved in a valuable manner for the ordinary days of peace. For example, interesting records of work done on questions of ionisation, of osmotic pressure, and of colloid constitution, will prove as valuable to a world of peaceful development as munition work was valuable to a world of ruin. In his review of the developments which have taken place in general and physical chemistry Professor H. M. DAWSON expresses the hope that the demobilisation of chemists engaged on war work will be quickly followed by a revival of activity in the investigation of the many non-technical physico-chemical problems which call for inquiry. This is an assured sequence of events, and we may go further and assert that the lessons learnt in military exigencies will have their fruit in civil results. The review of the developments during the year in the field of inorganic chemistry contributed by Professor E. C. C. BALY, shows that in this division there was a marked diminution in the number of papers published. Generally speaking, the work has been restricted to the preparation of new substances which have no direct interest to medicine. Exception occurs in the case of the preparation of inorganic colloids, as, for example, nickel and mercury, in which glycerol containing gelatin or gum-arabic is

employed as a protective colloid. For the employment of colloidal metals in medicine is increasing. In the region of organic chemistry, in spite of original ability being largely directed into emergency channels, there are signs of research work entering on a more active phase, to quote Professor J. C. IRVINE on the aliphatic division of the science which, of course, comprises the hydrocarbons, alcohols, and carbohydrates, including the sugars. Catalysts have here played a strong part, notably in the case of alcohol, reducing that complex to aldehyde, or as far as a hydrocarbon, ethylene. The isolation referred to in this section of an oil from shark liver containing 90 per cent. of an unsaturated hydrocarbon has already been mentioned in our columns. It is the first time, we believe, that a hydrocarbon or non-saponifiable oil has been found in the animal organism.

During the year considerable attention appears to have been given to the study of natural products mainly in the alkaloid group, and Professor A. W. STEWART regards it as a hopeful sign that organic chemistry is once more turning back to its original field, leaving a little aside the purely synthetic research which at one time threatened to divorce the general science from naturally occurring materials. The investigations centering about the connexion between chemical constitution and physiological action in the cocaine series are of interest. In the course of this investigation a useful compound has been isolated; it has been termed ecaine, and is reported to be more active than cocaine as a local anæsthetic, with the additional advantages of being non-toxic and sufficiently stable to render its sterilisation easy. Further progress is reported towards the complete synthesis of quinine, and the constitution of the ipecacuanha alkaloids has been successfully studied. Analytical chemistry has suffered through shortage of materials and apparatus, which has led to the devising of more economic methods and the recovery of reagents. One curious example of this is the use of an alloy of 11 per cent. of platinum with 89 per cent. of gold as a substitute for platinum in analytical work. Dr. F. GOWLAND HOPKINS, in reviewing the progress of physiological chemistry, reports that the papers dealing with the dynamic side of physiological chemistry—the process of metabolism—have been few. He deals chiefly with the contributions that have been made on emulsoid colloids, chemical factors in shock (gum-arabic solutions in the treatment of circulatory failure), the phosphorus complexes of living cells, and the degradation of carbohydrates. With regard to radio-activity Professor FREDERICK SODDY writes that the most important advances are concerned with the discovery of the parent of actinium—proto-actinium—which, in addition to adding an interesting chemically new element to those discovered by radio-active methods, completes probably the long sequence of changes suffered by the radio-elements. We are glad to know that these annual reports, containing as they do a valuable and authoritative epitome of the principal definite steps in advance made in each successive year, are available to medical men.

The Ministry of Health Bill: The Inspection of School Children.

A Standing Committee of the House of Commons, which is now considering the clauses of the Ministry of Health Bill, adopted on Tuesday last an important amendment without a division, and in the face of protests from Dr. ADDISON and Mr. H. A. L. FISHER, the two Cabinet Ministers whose functions were immediately concerned. The amendment provided for the immediate transfer to the Ministry of Health of the functions of the Board of Education in regard to the medical inspection and treatment of children and young persons. The Bill, it will be remembered, proposes to combine under one State Department the existing responsibilities of the Local Government Board as far as health is concerned and all the functions of the Insurance Commissions for England and Wales, and also proposes to include the duties of the Board of Education in respect of the health of expectant and nursing mothers and children under school age. But with regard to the medical inspection of school children and young persons, a duty which now appertains to the Board of Education, it was understood that that Board would not resign without real regret its responsibilities in this direction; and on the introduction of the Bill it was stated that no such step would be found immediately necessary. Mr. G. LOCKER-LAMPSON, however, proposed an amendment in the sense indicated above—namely, to provide that all the powers and duties of the Board of Education with respect to the medical inspection and treatment of children and young persons should be transferred to the new Ministry of Health. A brief account of the debate which followed will be found in our report of Parliamentary proceedings, from which it is clear that the amendment was carried in deference to a practically unanimous feeling on the part of the Committee in its favour. The Committee held the view that as the object of the Bill was to take over the health services from the various departments of the State, and thus to prevent overlapping, medical inspection and treatment of school children could not be left outside its scope. In any case it is only during school hours—a small part of the child's day—that the Board of Education exerts its influence. Dr. ADDISON pointed out that under the Bill there were two categories of services—those to be transferred forthwith, and those for which room would be made later on; and he warned the Committee that to put too much on the shoulders of the new Ministry at the outset might be to risk a breakdown. But as a matter of fact it was felt by many medical men on the introduction of the Ministry of Health Bill that the medical inspection of school children and young persons formed a necessary part of the duties of any Ministry of Health; while it may be recalled that dissatisfaction with the provision for the medical treatment of school children under the Board of Education was strongly expressed in the House of Commons in July last, on the report stage of the Education Bill, and led to its recommitment in this respect. The Standing Committee of the House of Commons have moved, perhaps, with more directness than was anticipated, but when the Bill was drafted no doubt those in charge of the task expected to encounter opposition at this spot. The amendment, which we welcome as a step taken now which it was intended to take in the near future, will be reviewed on Report.

Annotations.

"Ne quid nimis."

MUSTARD GAS: ITS BRIEF BUT INGLORIOUS CAREER.

Sir William Broadbent is credited with the remark that a health resort, as soon as it became well known as such, ceased to be a health resort. Something similar has been the case of mustard-gas poisoning. The military censor kept from all except a very small circle all information regarding the gas as a deadly weapon of offence, and now that we are allowed to learn about it, it has ceased to be a deadly weapon. Mustard gas began its inglorious career as a constituent of "yellow cross" shells on July 12th, 1917, and ended it, we presume for ever, last week, when the Paris Conference decided to make the cessation of its manufacture a condition of renewing the armistice with Germany. Most of the clinical and all the experimental information is available in the reports of the Chemical Warfare Medical Committee, of which Professor Leonard Hill is chairman and Dr. J. S. Edkins secretary, issued by the Medical Research Committee. The contributions of Dr. T. G. Moorhead and Dr. William Boxwell, read before the Royal Academy of Medicine in Ireland,¹ give a useful survey of the whole field, and we have had before us the report of remarks on the eye lesions following exposure to the gas made by Dr. G. Viner, Captain, R.A.M.C., at the Le Tréport Medical and Surgical Society.

Chemically, mustard gas is di-chlor-ethyl sulphide. Watts's Dictionary of Chemistry (1890 edition) gives particulars of its preparation from glycol chlorhydrin, potassium sulphide, and phosphorus pentachloride, the product being described as very poisonous and violently inflaming the skin. Although popularly called a gas, it is an oily liquid, boiling at 217° C., with a slight but agreeable ethereal odour resembling pineapple. Some claim to notice a faint aroma of mustard, but unlike the suffocating gases known from earlier experience, mustard gas was unsuspected by our troops, who, misled by the latent period before the onset of symptoms, suffered from poisoning in an acute form ere its evil properties were realised. Nearly insoluble in water and only slowly decomposed by it, mustard gas naturally exercises its principal effect upon the moister areas of the skin, especially the bathing-drawers area and the axillary folds, as well as on the mucous membranes, beginning with the conjunctiva, nose, and mouth, and soon extending downwards throughout the whole respiratory tract. Even conjunctivitis does not set in for three hours or more, vomiting and epigastric pain, when they occur, are delayed for five or six hours, burns take 12 hours or more to develop, and the laryngitis, tracheitis, and bronchitis do not reach their full degree until 48 hours or even longer after exposure. The lateness of the cutaneous and mucous symptoms has suggested to some observers that they are due to excretion by the skin and membranes after absorption in the lungs rather than by direct action. But the slow decomposition in the presence of moisture is a more likely explanation. The ill-effects reach a maximum in the first two or three days and, if the resulting anoxemia does not then prove fatal, late results are much less common than

¹ Dublin Journal of Medical Science, Jan. 1st, 1919.

when suffocating gas has been inhaled, a fact which emerges from Professor Achar'd's abundant experience, as our Paris Correspondent recorded last week. The nature of the dangerous pulmonary lesions was made clear early by the experimental work carried out by H. M. Carleton in the Oxford Physiological Laboratory. In the acute stage he found desquamating tracheal epithelium, within its lumen an inflammatory plug of leucocytes and red blood cells, a similar but more advanced condition throughout the whole bronchial tree with swelling and shedding of the cells lining the alveoli. In the stage of recovery the alveolar walls were still thickened, many of them collapsed, and the blood-vessels in a state of dilatation. The latter changes are evidently the commencement in milder form of the pulmonary sclerosis which is such a lasting and disabling sequel of exposure to suffocating gas.

The treatment of the immediate effects of exposure to mustard gas is simple and obvious. An immediate warm alkaline bath to neutralise any oil left on skin, warm isotonic alkaline washes for the throat and nose, menthol steam inhalation for the respiratory tract. In cases with severe involvement of the respiratory tract the diminished surface for absorption of oxygen demanded the same measures as for the victims of suffocating gas. The burns produced on the skin were often found intractable to any form of treatment. It soon became evident that the physical effects of the poisoning were liable to be supplemented by a functional element due to the appalling nature of the experiences undergone by the exposed man. The acute onset of symptoms long after the exposure to the gas, and the tension of expectation thus produced, were factors likely to upset the mental balance of all except the most phlegmatic. It became a rule among medical officers to return patients making good progress to army discipline with the least possible delay, and to avoid prolonged stay in hospital, which was found specially apt to establish neurotic conditions. Every effort was made to deflect the patient's attention from the condition of his eyes, shades and coloured glasses being only exceptionally used. Vomiting of persistent and troublesome type appeared to be a neurotic symptom and its occasional recurrence after intervening months of recovery confirmed this view of its nature. The whole distressing story of mustard-gas poisoning teems with medical interest. But while its lessons are worth taking to heart, we may well hope that the disease itself need only appear in the future text-books of medicine as a curiosity and the relic of a savage age destined never to return.

COLLOID METALS AND PHENOL IN THE TREATMENT OF INFLUENZA.

DURING the recent epidemic many different opinions have been expressed by writers in the Italian medical press as to the value and efficacy of various methods of treatment in severe cases of influenza. Of these methods two claim, perhaps, special notice as being more frequently adopted by our Italian colleagues than they are in this country. Dr. Miggiano¹ draws attention to the value of injections of ethylhydrocuprein into the gluteal region, and states that he has noticed areas of broncho-pneumonia rapidly clear up in 24 hours after a single injection, the characteristic signs of infiltration of the pulmonary tissue being replaced

by a group of crepitations and consonant râles. Two or three injections on successive days, in doses appropriate to the age of the patient, sufficed to improve the general condition, reduce the temperature to normal, and induce resolution of the pneumonia. Much the same results are claimed for colloidal gold by Professor P. Rathery, of Paris, and three collaborators, in an important study² of the pulmonary manifestations of influenza. The *chute thermique* which occurred sometimes after the first dose was associated in their experience with a complete change in the patient's general condition. Dr. Sebastiano Orlando³ obtained very striking results at the Military Hospital in Florence by intravenous injections of phenol in troops sent from the front with influenza complicated by severe bilateral broncho-pneumonia, and was equally successful in the administration of this drug by intramuscular injection and by mouth. He gave two daily injections of 5 c.cm. of a 2 per cent. solution of phenol, and by mouth 1 g. daily of phenol in 300 g. of water and 50 g. of syrup of aniseed. The results were equally good, but the curative processes occupied a much longer time by the oral method. This treatment had no injurious effect on the kidneys, but, on the contrary, the albuminuria which so often accompanies severe cases of influenza tended to disappear. Dr. Orlando claims as a result that while in October, 1912, in the province of Massa he had a death-rate among his influenza patients treated on the usual lines of 6.4 per cent., with phenolisation he obtained 100 per cent. cures, except in those cases where treatment was delayed until too late.

THE WARBLE FLY.

THE damage caused to cattle, meat, and hides by the ravages of the warble fly has at last been made the subject of Government inquiry, and a scientific subcommittee has been appointed to supervise and control experiments, which are to be carried out in different parts of the country in order to discover, if possible, a method of eradicating this pest. Two species of warble flies, *Hypoderma lineatum* and *H. bovis*, occur commonly in this country, and though they have been studied for nearly half a century it is only during the last two or three years that the details of their curious life-cycle have been elucidated. The female fly attaches her eggs to the hairs of cattle, invariably on the legs or lower part of the body. If the cattle become aware of the presence of a warble fly they show much excitement and run about in a peculiar frightened manner known as "gadding," which may often be observed on sunny days in early summer. About three days later the egg hatches, and a tiny maggot emerges and climbs down the hair, burrowing its way into the hair follicle, whence it apparently enters the blood stream and eventually reaches the gullet. The fact that the next stage occurs in this site led to the belief that the cattle licked off the eggs from the hairs and that the young larvae hatched in the gullet, but it has been shown that careful muzzling does not prevent cattle from becoming infected. The maggots appear in the wall of the gullet towards the autumn and remain there all the winter. About March they go to the back by travelling through the tissues of the animal. One route is for the maggots to leave the gullet near its junction with the paunch and enter

¹ Il Morgagni (Part II.), Feb. 15th, 1919.

² Paris Médicale, March 1st, 1919.
³ La Riforma Medica, Jan. 18th, 1919.

the connective tissue of the diaphragm, which they follow between the strands of muscle downwards and outwards till they reach the cartilage of the ribs. They then proceed along the posterior border of a rib, always in the connective tissue, and either go straight to the hide of the back, or find their way into the spinal canal, from which they emerge nearer the animal's tail. Established in the hide, a cyst, or "warble," is formed round the maggot, which now makes a hole to the exterior for breathing purposes. In due time the larva comes to maturity and falls out of the warble to turn to a chrysalis in the ground. The adult fly appears about five weeks later, the whole life-cycle taking about one year for completion.

The chief damage caused by these flies is that to the hides of cattle, resulting from the perforations of the warbles. A moderate estimate puts the annual loss in damaged hides at upwards of £300,000 in this country alone. In addition, the presence of the cysts in the back causes the flesh to develop an unpleasant appearance known as "jellied beef," which considerably reduces its market value. Add to this the loss of condition in the animals attacked and it will be realised how serious are the ravages of this pest. It is to be hoped, therefore, that the efforts of the Government will result in the discovery of some method of dealing with the warble fly and preventing these losses.

INDUSTRIAL DISPUTES IN ASYLUMS.

THAT third parties should suffer in consequence of a dispute for which they are not responsible has been such a customary experience during the past few years that an additional instance may attract only a moderate degree of attention, even though some of the victims of it are more helpless than usual. The contest between the various asylum authorities throughout the country on the one hand, and the National Asylum Workers Union on the other, appears likely to prejudice the interests of those whose needs are ostensibly the care of both parties, and there have already been cases in which the issue has been fought out irrespective of the well-being of the insane in the asylums, or of the general community outside. Since the brunt of any trouble which arises in this way has to be borne primarily and chiefly by the medical men in charge of the institutions affected, it is but natural that these gentlemen should be feeling some anxiety as to the course of events, and that the body which is, in a measure, representative of them should be displaying a certain liveliness. On two occasions recently, at well-attended meetings of the Medico-Psychological Association, attempts have been made to find some satisfactory way of ensuring for medical superintendents a voice in deciding questions with which they are intimately concerned and in regard to which they are especially qualified to speak. A resolution adopted on Feb. 20th urged "the provision of an advisory board of experienced medical officers of asylums to indicate how any alterations proposed would affect the welfare of the patients," but it seemed to be generally realised that however valuable this expression of opinion might be as such it would not advance matters very considerably unless one or other belligerent should show some disposition to ask for advice. The attitude of those who were present at the second meeting appeared to be that to bring about effective intervention it would be necessary for

medical superintendents to obtain representation on any committee of local authorities which might be constituted, though it was felt that this proceeding might introduce its own peculiar difficulties by setting a medical superintendent in opposition to the staff nominally under his control. Looking at the matter from the standpoint of the national welfare, there can be no doubt as to the expediency of giving full weight to the opinions of asylum superintendents in relation to matters of asylum administration, and since the general public needs the assistance of the superintendents the general public should take steps to get it. Probably the most effective method would be to bring pressure to bear on the Minister of Labour and on the Minister of Health, when appointed, through the instrumentality of Members of Parliament. The Medico-Psychological Association could then appoint an advisory body with some hope of its services being utilised, and the members of the association might escape from the uncomfortable position between the devil and the deep sea in which circumstances have placed them.

DANGEROUS CHLOROFORM APPARATUS.

THE possibility of causing liquid chloroform to issue from the exit tube of some forms of pumping apparatus has long been recognised. The fatal consequences of such an accident need no demonstration. All apparatus capable of providing such a mishap should be avoided, and for many years it has been possible to obtain instruments removed by construction from such a perilous contingency. In a fatal case recently recorded in the daily press the instrument used is described as a "Hunter" inhaler. Presuming that "Junker's" inhaler is intended, it may be said at once that in the original form of this apparatus the escape of liquid chloroform to the patient was fairly easily possible, either by fixing up the tubes incorrectly or by over-tilting the bottle. The late Sir Frederic Hewitt devised a modification of Junker's inhaler which is perfectly safe as regards this particular accident, and there are others in which, if not absolutely impossible, the accident can occur only by very excessive overfilling of the chloroform bottle. Such are Buxton's modification of Junker's inhaler and Shipway's warm vapour apparatus. We would most warmly recommend young anaesthetists to examine any pumping apparatus from which they propose to administer chloroform very carefully before they use it, and to bear in mind the accident alluded to above.

AN ANALYSIS OF 8670 OPHTHALMIC CASES TREATED AT A HOME HOSPITAL.¹

Major A. W. Ormond here analyses the ophthalmic cases at the 2nd London General Hospital down to the end of 1917. Of 684 cases of "blindness" (most of whom were transferred to St. Dunstan's) 340 were completely without sight, and 175 of them had no eyes, both having been either destroyed by the injury or removed subsequently on account of pan-ophthalmitis, pain, &c. The cause of blindness was, in general, either the passage of a bullet or piece of shrapnel through the face in contact with one or both orbits, or else the bursting of a shell or bomb in front of the face; the proportion due to the latter cause exceeded that due to the former in the proportion of 3:2, and showed a tendency to increase in the later stages of the war.

¹ Medical Research Committee Statistical Report, No. 3.

Deliberate malingering was, during the period dealt with, very rare indeed. On the other hand, Major Ormond records 39 cases of what he terms "concussion blindness," but which might more appropriately be called psychical blindness, since they are neither cases following the passage of missiles in the vicinity of the globe and producing ophthalmoscopically recognisable results, nor cases in which a concussion of the cerebral cortex may fairly be assumed as the cause. These cases are usually the result of an explosion in the immediate vicinity of the patient rendering him unconscious. On regaining consciousness the patient is unable to open his eyes, and believes himself to be blind. He is not a malingerer. At the same time, if the true nature of the condition is not recognised in the early stage by the surgeon the prognosis of the case is enormously prejudiced. Other points in the analysis which may be noted are the rarity of sympathetic ophthalmia in this war, the disappointing ultimate results of the extraction of foreign bodies from the vitreous by the electromagnet, and the too great proportion of cases invalidated on account of such conditions as high myopia and nystagmus, which, if the medical inspection of these cases on enlistment had been anything more than a farce, should have prevented them from ever entering the army. The rather high proportion of injuries due to accidents not attributable to enemy action is also commented upon.

THE NURSING REGISTER.

CONTROVERSY centres at present around the proposal to grant supplemental registration to nurses trained exclusively in children's hospitals, and there is considerable opposition to including the nurses with special hospital training only in any scheme for State registration. The Central Committee for State Registration will not consider the proposal, but the Bill drafted by the College of Nursing contains a clause empowering the General Nursing Council, when set up, to institute supplementary registers to include nurses trained in other than general hospitals, the assent of the Privy Council being obtained to the conditions of training. Although this clause does not definitely establish a register for children's nurses, it grants power to the General Nursing Council to do so, and in this respect goes one stage further than any other association working for State registration of nurses. Although the nursing of children is not identical in every respect with the nursing required by adults, because the range of disease is different, a three-years' course of training in a children's hospital has the whole framework of a liberal nursing education, and we think that it would only be fair to nurses so trained to grant them the status conferred by entry upon a supplementary register. The other nursing specialties might then be pigeon-holed by the State, and in this way justice would be done to the special nurse and protection granted to the general-hospital-trained nurse, and the one would be less likely to encroach on the province of the other. It seems likely that a Parliamentary Committee will be appointed to consider the two registration Bills which are now being promoted, and one of which has just been read a first time in the House of Commons. A compromise may then be laid before Parliament. The position of the College of Nursing is strengthened by the fact that beyond the promotion of State registration it has a

definite programme of education. A scheme of affiliating children's hospitals with particular general hospitals is the policy of the College, and has already been adopted in one or two instances. The time spent by the nurse at the children's hospital is then counted as part of her general training. To those who are outside the actual arena of conflict a compromise on these lines would seem not difficult of arrangement. Given a working scheme of State registration as a basis the rest should soon follow.

A LARGE WASTE OF ACCESSORY FOOD MATERIAL.

NOW that it has been shown that the anti-scorbutic properties of lemon juice are in no way connected with the citric or other acids present, and that the accessory factor can readily be separated from these acids, attention may well be directed to the manufacture of citric acid from lemon juice on a large scale in such a way as to save the vitamine for special dietetic purpose. The world's yearly output of citric acid so prepared runs into many hundreds of tons. The acid itself is separated and recovered by a very simple process. Chalk is added to the juice, when insoluble calcium citrate is formed. The precipitate is removed and treated with an equivalent amount of dilute sulphuric acid, which liberates the citric acid, leaving behind insoluble calcium sulphate, part of which is deposited and the rest removed by filtration. Concentration and crystallisation of the clear fluid complete the process. It is obvious that the liquor strained off from the calcium citrate must be rich in the antiscorbutic factor, but as far as we know it has not been utilised. Here is a valuable source of accessory substance which should be saved. We suggest to manufacturers of citric acid from lemon juice that they devise some simple means of recovering the vitamine in a convenient form for transport and administration. In so doing a supply of essentially useful nutritive material would be rendered available without interference with the citric acid manufacture. Should the process, however, involve prolonged heating, the vitamine would possibly not survive, but steps might conceivably be taken to avoid such an occurrence.

A DIMINISHING POPULATION.

WITH the cessation of slaughter on the Western Front pestilence took up the task of keeping down the surplus population, and in the last quarter of 1918 the number of civilian deaths in England and Wales, as stated in the Registrar-General's returns, exceeded the number of births by 79,443. An actual diminution in the population in any quarter of the year was previously unknown during the whole period for which exact figures are available. It was, of course, principally the result of the influenza pandemic, which is officially credited with a casualty list of 98,998, or 41 per cent. of the total deaths registered. And this figure is more likely to be under-estimated than exaggerated. In the face of such a violent quake to the whole apparatus of vital statistics it seems hardly worth the trouble to attempt to estimate the effect of the customary small oscillations in birth and death rate. Suffice it to note the encouraging fact that 8000 more births were recorded than in the corresponding quarter of 1917. But here, too, the aftermath of war is seen in the unusually high proportion of illegitimates.

ROYAL INSTITUTE OF PUBLIC HEALTH.

THE Council of the Royal Institute of Public Health are arranging for a conference in the Guildhall, London, on "Problems of Reconstruction in Relation to Public Health," from June 25th to 28th. The opening meeting will be held in the Egyptian Hall of the Mansion House on Wednesday, June 25th, at 3 P.M., when the Lord Mayor of London will preside. The conference will mainly consider the following matters: (a) "The Work of the Ministry of Health"; (b) "The Prevention and Arrest of Venereal Disease"; (c) "Housing in Relation to National Health"; (d) "Maternity and Child Welfare"; (e) "The Tuberculosis Problem under After-war Conditions." Further particulars will be supplied by the secretary of the institute, 37, Russell-square, W.C.1.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

HOSPITALS in the County of London or within nine miles of Charing Cross desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1919 must make application before March 31st to the Honorary Secretaries, 7, Walbrook, E.C.4. Applications will also be considered from convalescent homes which are situated within the above boundaries, or which, being situated outside, take a large proportion of patients from London. Applications will also be considered from sanatoriums for consumption which take patients from London or which are prepared to place beds at the disposal of the Fund for the use of patients from London hospitals.

Colonel A. H. Tubby, A.M.S., has relinquished his duties as consulting surgeon to the Egyptian Expeditionary Force and resumed his private work.

Mr. Edred M. Corner will deliver the Harveian lecture of the Harveian Society at the rooms of the Medical Society of London, 11, Chandos-street, on Thursday next, March 27th, at 8.30 P.M., taking as his subject "Nerves in Amputation Stumps." Invitation is extended to all members of the medical profession.

WITH the April issue the Medical Supplement to the War Office *Daily Review* is being discontinued, but we are glad to learn that the change is only one of name and outward form. The Medical Research Committee have arranged to continue the issue of a *Centralblatt*, and hope to extend its range to cover British as well as foreign medical literature. An early announcement will be made on the subject.

KIDDERMINSTER INFIRMARY: PROPOSED WAR MEMORIAL.—A representative meeting of the burgesses of Kidderminster has been held at the Town-hall, under the presidency of the Mayor, to consider a proposed extension of Kidderminster Infirmary as a war memorial. It is suggested that the children's department should be extended, a new out-patient department and laundry built, and various additions made which will result not only in a building of architectural beauty, but provide at the same time accommodation for returned soldiers and their dependents who may need treatment, for work in connexion with the Child's Welfare Centre, for expectant mothers, and for tuberculous and venereal diseases, as well as for the general work of the hospital in connexion with the sick poor. Next year the infirmary will celebrate its hundredth anniversary, and the present is considered an opportune time to make an appeal. The cost of additional buildings and alterations is estimated at about £25,000, and Mr. Stanley Baldwin, M.P., has already given £5000 for the new children's ward.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

A Ministry of Health for Ireland.

THE question of a Ministry of Health for Ireland is one which looms large in the minds of those who have the good of the country and the welfare of its inhabitants at heart. The housing problem in Ireland is not more acute than it is in England only because the people themselves do not realise that their dwellings need improvement. Much has been done in the past through the Department of Agriculture, the moving spirit of which was Sir Horace Plunkett, in assisting by means of grants and in other ways the erection of labourers' cottages, but much more remains to be done. The slums of parts of Dublin and their equivalent in many outlying rural districts will bear comparison with the worst which can be found in London, Cardiff, or Glasgow, but no one bemoans them in the Irish press, probably because they are out of sight. It might be thought that a country with such large rural areas as Ireland would show a low mortality from tuberculosis, but precisely the opposite is the case.

Irish Vital Statistics: Conditions of Medical Service in Ireland.

At a meeting of the Statistical Society of Ireland held on Feb. 28th the Registrar-General, Sir William Thompson, who presided, said that between one-seventh and one-eighth of the total number of deaths occurring in Ireland were caused by tuberculosis in its various forms. The deaths from this disease in England and Wales during the quinquennial period 1911 to 1915, compared to 1866 to 1870, showed a reduction of 56 per cent., whereas in Ireland the reduction was only 13 per cent. In 1916 the death-rate from tuberculosis for England and Wales was 1.53 per 1000 of the population; in Ireland for the same year the rate was 2.15, a difference of 0.62. In Ireland in 1917 the total death-rate was 16.8 per 1000, or 2.4 per 1000 higher than England and Wales. The infant mortality rate in England and Wales in the quinquennium 1911-15 compared to that of 1866-70 showed a reduction of 30 per cent., whereas in Ireland the reduction was only 4 per cent. Experts were agreed, he said, that the infant mortality rate should fall between 40 and 50 per 1000 births. In Ireland the rate for the ten years 1907 to 1916 was 92.

Comparing the same quinquennial periods Dr. M. F. Cox, in the course of a paper which he read, said that the death-rate in England and Wales had decreased by 36 per cent., in Scotland by 29 per cent., whereas in Ireland it had risen by 2 per cent. Dr. Cox also drew attention to the fact that, though the Poor-law officers rendered splendid services to the poor, they were wretchedly underpaid at all times, but more especially at present. Many of the dispensaries were, he said, utterly and disgracefully unsuitable for the ministrations to the wants of the sick poor; the space afforded was inadequate, and provision for privacy and for proper examination was entirely wanting.

Sir John William Moore drew attention to the fact that only two county boroughs in Ireland had medical officers of health—namely, Dublin and Belfast. Every hospital in Dublin was in debt and required State aid. It was an outrage he said, that men acting as labourers should get as much, or more than the dispensary medical officers.

Sir T. W. Russell thought that it would be wiser to press for a separate Bill for Ireland than to extend the present Ministry of Health Bill. The fact that they were legislating in the absence of over 70 Irish Members would have to be considered, and what these men would say would have to be taken into account. It was possible that they could get the opinion of the country without them. There can be no doubt that Ireland needs a Ministry of Health, and this should not be withheld from her because certain of her Members have refused to attend at Westminster.

Proposed Establishment of Irish Public Health Council.

The Chief Secretary for Ireland, in whom is vested all questions of policy and administration for the Irish health measure, has tabled an official amendment in reference to the establishment of an Irish Public Health Council. It is to consist of the vice-president (Sir Henry Robinson) and two other commissioners of the Local Government Board (as the

Chief Secretary is president this means that the Local Government Board would have four members on this Irish Public Health Council, one or more of the Irish Insurance Commissioners, nominated by the Chief Secretary, the Registrar-General, and such number of registered medical practitioners—not exceeding three—as may from time to time be nominated by the Chief Secretary; one is to be a woman and one a medical practitioner holding a diploma in public health, sanitary science or State medicine.

An Irish Public Health Council so constituted will never satisfy the medical practitioners of Ireland. They feel (1) that they will not have sufficient numerical representation on such an advisory health board; (2) they will demand the right of electing their own members rather than having them nominated by other boards in Dublin; (3) they argue that the Local Government Board would have a preponderating influence, and that such an Irish Public Health Council must not be made a subcommittee of the Local Government Board, as occurred in the case of the Midwives Board for Ireland. It should be a committee with medical practitioners representative of the whole country, north and south, and not of Dublin alone. In the past whatever official guidance in public health matters there was emanated from Dublin, with the result that Ireland is half a century behind Great Britain in public health progress.

A Separate Bill for Ireland.

On the whole, opinion is hardening that Ireland, as in the case of Scotland, must have a Health Bill of her own suited to her backward (public health) condition. If the Chief Secretary is to be successful in passing a Health Bill for Ireland which will work he will have to consult the medical profession and frame his measure on broad democratic lines.

Unfortunately, at the present moment the Irish medical profession is speaking with an uncertain voice. The authority of the Irish Medical Committee, which represented the profession in the struggles arising out of the Insurance Act, has been challenged by the Irish Medical Association, which is endeavouring to take the controlling part. An influential deputation from the Royal College of Physicians of Ireland, appointed to wait on the Chief Secretary, has not yet been received by him. Doubtless there are little, if any, differences of opinion among Irish medical men on the general question of a Ministry of Health and the need for reform and unification of all the public services concerned with health matters. But the lack of the moment is a representative medical body to initiate a clear line of policy.

March 18th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Influenza Pandemic.

FOR the last six weeks the public mind has been greatly perturbed by the possibility of an outbreak of so-called Spanish influenza. The authorities have been on the alert since the first danger threatened from New Zealand, and at a conference of officials it was decided to call the disease "pneumonic influenza," and certain common preventive measures were agreed upon. The chief strain has fallen on the Sydney quarantine staff, as several vessels arrived in quick succession from New Zealand and the Islands with severe outbreaks among passengers and crew, in addition to one or more transports. West Australia was also called on suddenly to deal with overseas cases, in transports, of very severe type. Up to the new year the effort of the quarantine authorities to confine the disease within the quarantine hospitals has been successful, and no case has been reported on shore with the exception of a soldier who suffered a relapse after being discharged from quarantine. Up till the end of December the total number of cases dealt with at the different quarantine stations was between 1200 and 1300, and there was a death-rate of some 5 per cent. Three nursing sisters have contracted the malady in quarantine and died. The most virulent cases were among those from the *Atua*, a steamer from Fiji and the Pacific Islands. Generally speaking, the medical experience of the disease has been similar to that reported from other parts. Some of the Sydney cases exhibited hæmatemesis as a prominent symptom, and the suddenness of onset has occasionally been dramatic. The Federal Quarantine Department issued

a vaccine which was used both as a prophylactic and therapeutic measure. It does not yet appear that it had any controlling influence, but it was stated that severe symptoms were modified. This vaccine was also available to the profession, and many thousands of persons have been inoculated. It is now hoped that the danger of shore infection is over as far as the cases already dealt with are concerned, and for the present the outlook is good. On the whole, the organisation of the Quarantine Department appears to have been satisfactory, but there have been many individual complaints of hardship and discomfort. In Victoria and elsewhere the Red Cross officials helped materially by sending food and medical comforts to the troopships. For a time the Director refused to admit clergy to minister to the dying in quarantine, but subsequently permission was given for clergy from outside to be allowed into the stations under regulation.

Influenza Vaccines.

In Sydney there has been a popular response to the proposal of inoculation against influenza, with the natural result that many patients suffering from complaints other than influenza declare that they have been cured by the vaccine. Many disorders, from chronic catarrh to acute neuritis, are stated to have miraculously disappeared after inoculation. Ready belief in the mysterious and novel is not unknown here. Two vaccines have been in use differing somewhat in composition. One was issued by the Federal Department, the other by the Health Department of New South Wales. Professor H. G. Chapman, of the Sydney University, has publicly deprecated the employment of vaccines without a knowledge of the infection they are presumed to combat, stating that from his experimental work inoculation appears to lessen the resistance of the patient to an attack of influenza if the organisms used in the vaccine are not those infecting the patient.

Nationalisation of Medicine.

The nationalisation of medicine is a growing topic of public interest and discussion, particularly in Victoria, where the lodge dispute has been acute. The present dual control of public health administration by Federal and State authorities renders it improbable that any comprehensive scheme is likely in the immediate future. At the same time there seems a real danger that individual States may attempt some immature suggestions designed to supply cheap medical attendance. The Federal authority at present only extends to matters of quarantine, and every State has an existing department of public health controlled by a Minister and directed by expert officials. Any nationalisation scheme of Federal extent would require an amendment of the constitution. The subject is set down for consideration at the forthcoming meeting of the Federal Medical Committee. The attitude adopted by this body, which is composed of delegates from the State branches of the British Medical Association, is that no hostility to any proposal is at present desirable, but that the Association should be prepared to suggest some scheme if need arises. The Victorian branch recently appointed a subcommittee to report on the general attitude advisable. This report has not yet been adopted, but it is an open secret that while advocating a wide extension of public health activity, the establishment of a State-controlled clinical service is viewed as a retrograde step both from the public and professional points of view, and the retention of the voluntary hospitals system is strongly advised.

Ankylostomiasis.

Dr. Waite, of the Rockefeller Institute, has been engaged for some time in investigating the incidence of hookworm disease in North Queensland, and has arrived at the conclusion that the local population is being seriously affected. The subject has been brought under the notice of the Federal Government and a sum of £35,000 has been voted to assist the further investigation by Dr. Waite of the best methods for overcoming the danger. At present it is clear that the sanitary conditions are very primitive in the towns and that the proper disposal of nightsoil is an elementary need. Dr. Waite concludes that those children affected by the parasite suffer not only from anæmia, but are stunted physically and mentally and deficient in sexual development.

Australian Army Medical Corps.

Surgeon-General R. H. Fetherston has resigned the post of Director-General of the Australian Army Medical Service, which he held from the outset of the war, and has resumed

private practice. He will be succeeded by Surgeon-General (temporary) G. Cuscaden, who was Principal Medical Officer 3rd Military District of Victoria, and acted as Director during Surgeon-General Fetherston's absence in France and Great Britain.

Jan. 8th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Protection of Medical Practice in France.

FRENCH law admits to the practice of medicine in France only those who possess the State diploma, and this diploma in its turn can only be obtained by graduates of a French university who have entered for the full course of medical study. On the other hand, a university degree in medicine, while it includes the same technical examinations, does not demand from foreign candidates as an entrance condition any other diploma than that obtained in their own country, but the possession of such a degree does not confer any right to practise in the country and has only academic value. During the war a large number of foreign doctors have visited France and given their care to the civilian population, some of them also working in the military hospitals of the Red Cross in the absence of French colleagues on active service. Some who have now filled these places for years do not desire to return home and are asking that the tolerance exceptionally granted to them during the war shall be transformed into a regular authorisation. These individuals have readily acquired a University diploma which they now ask to have changed into a State diploma. This change is provided for by the law, but requires the candidate to pass anew his last examinations with a resultant delay of years. The foreign doctors in question are asking to be dispensed from these legal formalities on the ground of services rendered to France during the war. Some of them have, in fact, rendered real service to the country; they have been mentioned in despatches, have received decorations, even wounds, but the larger number have simply used the opportunity afforded by the withdrawal of French doctors on mobilisation to obtain situations which they judged better than those available in their own country. French doctors now returning to their own practices see in this foreign invasion a grave personal danger, and on the intervention of a Deputy, M. Georges Bonnefons, the Minister has decided not to grant the exchange of a University diploma into a State diploma, conferring the right to practise, nor the dispensation from the examinations necessary to acquire this diploma, except in very special cases justified by unusual circumstances. Up till now two such authorisations alone have been given.

Medical Demobilisation.

The return of practitioners from active service to take up civilian practice again is slow but sure. The same rule applies to them as to other branches; they are demobilised according to class—that is to say, at the same time as the private soldiers of the same age-group, obtaining with them the same benefit of an advance of a year in age for each child beginning with the fourth. Some who hold appointments near home have asked to be allowed to remain at their present work until the signing of peace. This proposal has only been accepted in the case of a small number, whose presence as special consultants is declared indispensable by their commanding officers; indeed, Parliament has directed the saving of money by every possible reduction in the number of those drawing military pay. Too much may have been sacrificed to this spirit of equality and economy, since even now there is an obvious shortage of doctors for the existing hospitals. There are still many soldiers requiring treatment. The recent epidemic of influenza quickly filled the hospitals still available, those installed in large hotels and educational buildings having already been closed. Numbers of wounded men still need prolonged treatment, others will require physiotherapeutic treatment, massage or electrical treatment, lasting over many months. All who have been discharged on account of wounds and are drawing State pensions have the right to lifelong gratuitous treatment in the military hospitals. Under these circumstances it is plain that doctors have been demobilised too quickly, the services having been

refused of many who disinterestedly offered to continue their good offices. The new appeal for volunteers betrays a certain inconsistency in method. Another question which still engrosses the Under Secretary of the Service de Santé is that of the medical service for the region of the Nord, now liberated from enemy occupation. In these regions the inhabitants are returning to ruined villages in which most of the houses are uninhabitable. The unfortunate people cannot be deterred from reoccupying mere ruins where they live under deplorable conditions. Illness due to cold, lack of hygiene, and defective alimentation is of frequent occurrence, and no medical aid is at hand. The practitioners of the districts have either been mobilised and do not intend to return, or have migrated to other places where they have settled down provisionally, and begun to build up practices. To attract doctors anew to the forsaken regions the Ministry has decided that all doctors who take up their pre-war work shall receive a monthly salary of 500 francs for two years, and travelling facilities will be supplied to them in the form of motor-car or cycle. The Under Secretary of State has also given instructions that instruments are to be loaned to doctors who return to their own district.

A French Orthopædic Society.

A French Orthopædic Society has just been founded in Paris with Professor Kirrison as its president, and Professor Broca and Professor Denucé (Bordeaux) vice-presidents. Elected members alone will have the right of reading papers at the annual October session, due notice being given in advance of the subject-matter. Three topics suggested for discussion in October, 1919, are: (1) prosthesis after amputation; (2) war spondylitis; (3) surgical treatment of pseudarthrosis. The general secretary of the society is Professor Nové-Josserand, of Lyon.

March 15th.

THE FELLOWSHIP OF MEDICINE: EMERGENCY POST-GRADUATE COURSE.

THE scheme¹ for an emergency post-graduate course of three months for qualified medical officers, now approaching maturity, cannot fail to be of much present and prospective value to teachers as well as students. The executive committee is fortunate in having Professor Sir William Osler as chairman.

The approaching release of the various members of the Medical Services attached to the Canadian, Australian, and American Armies has offered an opportunity for post-graduate study in England which the Directors of those Services have not been slow to realise. There is much clinical material and many schools in London and the provinces. Together they form the material for a teaching faculty which has never yet been properly coördinated and made use of even by the British members of the profession. Medical men from overseas now on military service in Europe are keen in their appreciation of a privilege which in many cases is not likely to be repeated. The Fellowship of Medicine has been quick to formulate a scheme to supply their needs. Members of the staffs of many hospitals in sympathy with the movement have consented to coöperate with the Fellowship. The Royal Society of Medicine has offered hospitality and formed the finest of headquarters. A programme is now being drawn up which will inaugurate a new era in the rather troubled and disappointing history of post-graduate work in London. Facilities have been offered by the directors of the overseas medical services whereby members of their staffs are allowed three months' leave for post-graduate study before demobilisation or return to their home units. Those men will shortly be flocking into London eager to make the utmost use of their furlough. The problem has been how best to conserve their time and energy; how to obviate an unsatisfactory wander from medical school to medical school, inevitably ending in loss of objective, waste of endeavour, and disappointment.

The obvious solution rests in centralisation. The Fellowship of Medicine, in conjunction with many of the medical schools² and hospitals of the metropolis, and with the assistance of the Royal Society of Medicine, has arranged a

¹ See THE LANCET, March 8th, p. 400.

² St. Mary's Hospital is included in the scheme. It was erroneously omitted from the list of coöperating medical schools supplied to us.

course of daily lectures and demonstrations on general and special subjects to be held five days a week for several months at No. 1, Wimpole-street. The advantage of holding the complete course under one roof is clear. Students attracted by special subjects and individual teaching will naturally complete their course by specialised work under their demonstrators at the respective hospitals. And the scheme of centralisation under such conditions has appealed strongly to men who have little time to lose, and who desire to devote every possible moment of their short leave to the furtherance of their medical education. The number of applications to join the course already received from members of the Canadian, American, and Australian Medical Services is so large as to assure the complete success of the course.

The programme of the lectures and demonstrations is now in an advanced stage of preparation and must be definitely completed within the next few days. Those London faculties which have not yet signified their support of the scheme and a willingness to take their share in the programme should communicate with the secretaries of the Fellowship without delay. The course now being arranged for the benefit of medical men from overseas is likely to form the groundwork of a scheme which is likely to change radically the post-graduate work of the future.

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

City of Manchester.

Dr. James Niven's recently issued annual report for 1917 differs from its predecessors in this particular, that a portion of the usual statistical matter has been suspended. Nevertheless, the omitted tables have been prepared and are available for reference. The ordinary details of natality and mortality in Manchester have already appeared in the Registrar-General's returns, consequently they are not reproduced in the present review, in which only the more important vital statistics are referred to. In some respects local conditions have been favourable to the health of the civil population. A keen outlook has been maintained on the changing circumstances of families, and wages have been adjusted accordingly, from time to time.

It is important to observe that war conditions have led to an enormously reduced consumption of alcohol, and this fact has powerfully tended to the improvement of the public health. The local birth- and death-rates have never been so low as in 1917, and the conspicuous fall in infant mortality experienced in 1916 has been continued in the succeeding year. From all ordinary infectious diseases the death-rate has been comparatively low, whilst the recent upward trend of tuberculous fatality has apparently ceased. On the other hand, the following factors may be regarded as prejudicial to health and general well-being: (a) the strain of work has been excessive on considerable sections of the community; (b) there has been a noticeable increase of overcrowding; (c) a marked deficiency has been experienced in the medical services generally.

The Housing Problem.—An interesting section is that which deals with the problem of housing the labouring classes, who are still clamouring for dwellings within reach of their work. Has this question become more pressing in Lancashire than in other parts of England? If it has, this may be partially accounted for as follows: Ever since the rise of the cotton industry in this country there has been a natural tendency among workers to congregate in the larger towns, and the neighbourhood of Manchester almost immediately became the chief centre for that industry. Consequently, a large number of dwellings were hurriedly constructed for the use of the workers. In the absence of building by-laws these structures were erected according to the caprice of property owners, and without regard either for the health or the convenience of the tenants. In these circumstances serious overcrowding rapidly appeared, both of persons in rooms and of houses on an area. In large industrial centres like Manchester the municipal authorities are now confronted with the enormous task of sweeping away huge aggregations of dilapidated property which can never again be made fit for human habitation.

There is also the obligation to provide suitable accommodation for the large number of soldiers returning from the front, who will naturally refuse to be satisfied with dwellings defective in the essentials of health, comfort, and decency. Within the last 30 years or so considerable groups of slum property in Manchester have been cleared away. But recent war conditions have enforced the official declaration that "in the present famine for houses it is impossible to condemn houses unless they are unfit even to shelter the inhabitants."

Owing to an increase of 29,000 in the population since the last Census, a great housing scheme is needed, and a large number of dwellings are imperatively demanded at the present time. It is estimated that after the war 17,000 houses will be required to deal with about 80,000 persons. Three schemes of housing are at present under consideration, under which it is intended to build, in addition to 2600 workmen's cottages, a considerable number of cottage flats, some of which are to be furnished. Moreover, an estate of 50 acres has been acquired in South Manchester, which will eventually contain 700 houses.

Child-Welfare Work.—Under the direction of the infant life preservation committee home visitation has proceeded apace. In 1908 the splendid voluntary work of the Ladies Public Health Society was taken over by the corporation, who now employ 36 health visitors, most of whom are fully certificated nurses. Little change is recorded in the general duties of these officers during the year beyond the fact that the medical officer has handed over to them the investigation of cases of whooping-cough.

With the fall in the birth-rate a reduced number of notified births are referred to the visitors. Effort is made to bring all new births under observation as speedily as possible so that the health visitors may have accurate knowledge of all infants confided to their charge, and also with the hope of encouraging the habit of breast-feeding which is so often discontinued unnecessarily. In this connexion, however, it is satisfactory to learn that approximately 83 per cent. of the infants born in 1917 are known to have been breast-fed when first seen by the visitors.

Close co-operation obtains between health visitors, child-welfare centres, and the babies' hospital in Levenshulme. The health visitors regularly attend the doctors' consultations at the nearest centres. Apart from the instruction thus derived by the visitor there is the additional advantage that a diffident mother may often be persuaded to attend the consultations on being assured that her own health visitor will be present. Through the centres the visitors are in touch with the Manchester Babies' Hospital. Delicate and ailing infants are referred by them to the centres, and, if suitable, are at once passed on to the hospital. Moreover, on the discharge of an infant, it is promptly visited at home by the district health visitor, who is thus able to judge personally of the progress being made.

Towards the end of 1916 the school for mothers began to distribute milk at the chief centres under cost to mothers not able to pay the full price. From November, 1917, the supply of milk under these circumstances passed from the control of the school for mothers to that of the corporation, the financial liabilities being transferred at the same time. The members of the school for mothers, however, still continue their valuable aid by administering the milk-supply scheme.

Two observation nurseries have been established, and have proved effective in dealing with children not thriving. The doctors at the centres recommend cases for admission, and continue to attend them at the regular consultations, giving instructions to the matron and the mothers. The aims of these nurseries are twofold—first, to re-establish the children in good health; and secondly, to teach the mothers how to keep them well, when discharged. The mothers of children requiring massage are taught the necessary technique by the matron, while the mothers learn to appreciate the importance of open-air life with regular sleep and suitable food.

Tuberculosis: Public Health Administration.—At the request of the medical officer of health, Dr. D. P. Sutherland has undertaken the administration of public health tuberculosis work, insurance work, and the work of the care committee—a serious addition to his other duties. In reviewing the past year's work Dr. Sutherland refers to the crippling of clinical activity due to the shortage of medical staff. No extension of the work

is possible, and certain important investigations already commenced have for the present been unavoidably suspended. An effort is now being made by the Government to secure adequate treatment, with hospital provision if necessary, for all tuberculous sailors and soldiers on their discharge from service. Further steps have been taken for the colonisation of discharged men and for their training in agricultural work. This appears, however, to be regarded as a preliminary to a return to the "rough and tumble" of ordinary industry. Until it is recognised that many cases are quite unfit for such return this policy will fail to produce permanently good results on the tuberculosis problem. Attention is desirable to the unsatisfactory position of Manchester as regards the treatment of tuberculous children, and it would appear that one of the first extensions of the present scheme should be in that direction.

Upon notification every case of tuberculosis is seen by a trained visitor. The source of infection is sought for and attempts are made to discover contacts. Printed advice is left with the patient, who, if insured, is instructed how to apply for sanatorium benefit. The family income is in all cases ascertained, and if this is inadequate a grant may be made from the funds of the care committee. The success of this scheme depends upon the completeness with which the tuberculosis officer retains touch with the constantly wandering patients in the area. This constitutes what is termed the "after-care system." The work of the care committee has been carried on in the city for many years. It comprises all efforts for the maintenance of health among tuberculous persons. It involves provision of additional food where a shortage exists, advice in respect of work, and generally the protection of the patient and his family from the results of the disease. The question of finding suitable employment for tuberculous patients is a difficult and complicated one. A number of men in whom disease is arrested have been established in work under the corporation; but Dr. Sutherland sees no way of solving the difficulty until a scheme for widespread colonisation is established. In such a colony provision would have to be made for the varying strength and activities of the workers, for otherwise any training for gardening or light gardening pursuits alone would be attended with disaster.

The Venereal Diseases Scheme.—A Royal Commission was appointed in 1913 to review the position of venereal diseases in relation to the civil population. Their report contained the startling announcement that, in the opinion of the Commission, some 10 per cent. of the populations of our large towns suffer from the results of syphilis, while over 10 per cent. suffer from gonorrhoea or its effects. The Commissioners direct attention to two matters of exceptional urgency in the provision of free treatment to all persons suffering from venereal diseases, and the need for education of the public as to the extent of the evil, and as to the remedies proposed. Among several suggestions of the Commission one requires special mention—viz., that all advertisements of remedies for these diseases should be prohibited by law. This has already been done by the Venereal Disease Act of 1917, which has been applied to Manchester among other localities, and which, in addition, prohibits the treatment of venereal diseases by unqualified persons.

In pursuance of an Order by the Local Government Board, based on the recommendations of the Royal Commission, a scheme was submitted to the City Council in April, 1917, which provided for the establishment of venereal disease clinics in Manchester, and for treatment at the several hospitals of the city. The scheme was adopted by the City Council and sanctioned by the Local Government Board.

County Borough of St. Helens.

Dr. H. J. Cates's annual report for the year 1917 shows that there is still much left to be desired in the sanitary circumstances of this Lancashire town. The general death-rate for the year under review (16.53) was slightly less than that of the preceding year, but still in excess of the rate for the whole of England and Wales. So long as the inhabitants of the borough are permitted to occupy dwellings which are, for one cause or another, injurious to their health, an abnormally high death-rate will prevail in the district. Owing to the war practically no action has been taken under the provisions of the Housing Acts, and property generally is falling into a condition of disrepair. The

accommodation at the corporation's isolation hospital, inadequate in non-epidemic periods, was quite insufficient to meet the demand occasioned by the continuance of diphtheria and scarlet fever for the third successive year. The usual biennial outbreak of measles began in the second quarter of 1917 and continued for about 12 months. The disease in the beginning was moderately mild in type, but in the autumn and winter became severe. During 1917 4628 cases of measles came to the knowledge of the health department, every patient notified to the medical officer of health was visited, and home nursing was provided by the corporation in 711 instances. Dr. Cates expresses the view that efficient nursing can undoubtedly prevent the occurrence of complications in measles, and he thinks that there is every reason to believe that the extremely low death-rate of 1.4 per cent. during the epidemic can be attributed in part to the systematic employment of trained nurses in the homes of the patients.

During the year 1917 important progress was made in work connected with maternity and child welfare. Two new centres were opened and a total of 10,247 mothers and infants attended and received advice, while 152 patients were taken into the corporation hospitals. Apparently the value of dried milk is appreciated by the mothers in St. Helens. In 1914 1202 lb. of milk powder were distributed from the corporation depot, in 1917 the amount had increased to no less than 13,832 lb. The facilities thus provided by the depot insured the food-supply of a large proportion of artificially-fed infants and young children during the difficult times experienced on account of the war. Dr. Cates summarises the chief needs of the district as follows: the provision of houses for the working-class and the closing and clearance of certain insanitary areas; the provision of adequate hospital accommodation for maternity and infectious diseases; the conversion of the pail-closets and privies now in use; the abolition of the bricked ashplaces and the provision of closed ashbins; the paving of yards. It is to be hoped that, when the times become more normal, the corporation of St. Helens will give effect to Dr. Cates's recommendations.

URBAN VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING FEBRUARY, 1919.

In the accompanying table will be found summarised statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4.1 per 1000 of the population, estimated at 4,026,901 persons; in the three preceding months the rates had been 4.0, 4.2, and 4.5 per 1000. Among the metropolitan boroughs the lowest rates from these notified diseases were recorded in Kensington, Chelsea, the City of Westminster, Hampstead, Islington, Holborn, and the City of London; and the highest in Fulham, Bethnal Green, Southwark, Bermondsey, Deptford, and Greenwich. The prevalence of scarlet fever was slightly less than in the preceding month; this disease was proportionally most prevalent in Fulham, Bethnal Green, Southwark, Bermondsey, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1075 scarlet fever patients at the end of the month, against 1107, 1087, and 1043 at the end of the three preceding months; the weekly admissions averaged 139, against 146, 136, and 128 in the three preceding months. The prevalence of diphtheria was about 12 per cent. lower than in January; the greatest prevalence of this disease was recorded in Stoke Newington, Hackney, Southwark, Deptford, Greenwich, and Woolwich. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1000, 1089, and 1170 at the end of the three preceding months, numbered 1163 at the end of February; the weekly admissions averaged 163, against 129, 146, and 164 in the three preceding months. Enteric fever was somewhat less prevalent than in the preceding month; of the 13 cases notified in February, 3 belonged to Battersea, 2 to Wandsworth, and 2 to Woolwich. There were 18 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 33, 23, and 23 at the end of the three preceding months; the weekly admissions averaged 2, against 3, 1, and 3 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, St. Marylebone, the City of London, Shoreditch, Bethnal Green, Southwark, and Deptford. Nine cases of puerperal fever were notified during the month; of these 3 belonged to Fulham and 2 to Wandsworth. Of the 16 cases of cerebro-spinal meningitis 3 belonged to Islington and 2 to Lewisham.

The mortality statistics in the table relate to the deaths of civilians belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased had previously resided. During the four weeks ended March 1st the deaths of 8809 London residents were registered, equal to an annual rate of 28.5 per 1000; in the three preceding months the rates had been 42.3, 18.5, and 15.6 per 1000. The death-rates ranged from 22.3 in Bethnal Green, 23.5 in Greenwich, 23.7 in

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING FEBRUARY, 1919.

(Specially compiled for THE LANCET.)

| CITIES AND BOROUGHES. | Estimated civil population, 1917. | Notified Cases of Infectious Disease. | | | | | | | | | | | Deaths from Principal Infectious Diseases. | | | | | | | | | | | | |
|----------------------------|--------------------------------------|---------------------------------------|----------------|--------------|---------------|----------------|------------------------------|---------------------|-------------|-------------------------------|----------------|--------|--|------------|----------|----------------|--------------|---------------------|----------------|---|--------|--|----------------------------|-------------------------------|------|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other con- tinued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping- cough. | Enteric fever. | Diarrhea and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | Deaths from all causes. | Death-rate pe 1000 living. | |
| LONDON... .. | 4,026,901 | — | 524 | 571 | — | 13 | — | 9 | 124 | 16 | — | 1257 | 4.1 | — | 30 | 18 | 51 | 14 | 1 | 56 | 170 | 0.6 | 8809 | 28.5 | |
| <i>West Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington | 122,507 | — | 12 | 21 | — | — | — | — | 6 | — | — | 39 | 4.1 | — | 3 | — | 2 | — | — | 1 | 6 | 0.6 | 302 | 32.1 | |
| Kensington | 161,535 | — | 9 | 11 | — | — | — | — | — | 1 | — | 27 | 2.3 | — | — | — | — | — | — | 2 | 5 | 0.4 | 352 | 30.3 | |
| Hammersmith | 114,952 | — | 14 | 13 | — | — | — | — | 2 | — | — | 29 | 3.3 | — | — | 1 | 1 | — | — | 4 | 11 | 1.2 | 299 | 33.9 | |
| Fulham | 145,126 | — | 34 | 25 | — | — | — | 3 | — | — | — | 66 | 5.9 | — | — | — | — | — | — | 1 | 11 | 1.0 | 271 | 24.3 | |
| Chelsea | 57,368 | — | 3 | 8 | — | — | — | — | — | — | — | 11 | 2.5 | — | — | — | — | 1 | — | 1 | 6 | 1.4 | 141 | 32.0 | |
| City of Westminster | 122,046 | — | 5 | 12 | — | 1 | — | — | 5 | 1 | — | 24 | 2.5 | — | — | 1 | 1 | 1 | — | 2 | 5 | 0.5 | 304 | 32.5 | |
| <i>North Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone | 92,796 | — | 13 | 13 | — | 1 | — | — | 5 | — | — | 32 | 4.5 | — | 1 | 1 | 3 | — | — | 4 | 9 | 1.3 | 254 | 35.7 | |
| Hampstead | 75,649 | — | 3 | 4 | — | — | — | — | — | — | — | 10 | 1.7 | — | 1 | — | — | — | — | 1 | 2 | 0.3 | 163 | 28.1 | |
| St. Pancras | 136,600 | — | 29 | 25 | — | — | — | 1 | 7 | — | — | 62 | 4.3 | — | — | 1 | 2 | 2 | — | 3 | 8 | 0.6 | 526 | 36.7 | |
| Islington | 297,102 | — | 16 | 16 | — | — | — | — | 12 | 3 | — | 47 | 2.1 | — | — | 1 | 4 | 1 | — | 5 | 11 | 0.5 | 678 | 29.7 | |
| Stoke Newington | 47,426 | — | 1 | 14 | — | — | — | — | 1 | 1 | — | 17 | 4.7 | — | — | — | 3 | 1 | — | 1 | 5 | 1.4 | 104 | 23.6 | |
| Hackney | 196,598 | — | 33 | 48 | — | — | — | — | 2 | — | — | 83 | 5.5 | — | 1 | — | 6 | 1 | — | 8 | 8 | 0.5 | 396 | 26.3 | |
| <i>Central Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn | 35,303 | — | 3 | 4 | — | — | — | — | — | — | — | 7 | 2.6 | — | — | — | — | — | — | — | — | — | 126 | 46.5 | |
| Finsbury | 68,011 | — | 8 | 6 | — | — | — | — | — | 1 | — | 15 | 2.9 | — | — | — | — | — | — | 1 | 1 | 0.2 | 189 | 36.2 | |
| City of London | 16,138 | — | 1 | — | — | — | — | — | 1 | — | — | 2 | 1.6 | — | — | — | — | — | — | — | — | — | 30 | 24.2 | |
| <i>East Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch | 89,675 | — | 7 | 12 | — | — | — | — | 6 | — | — | 25 | 3.6 | — | — | 1 | 1 | — | — | 4 | 6 | 0.9 | 201 | 29.2 | |
| Bethnal Green | 107,362 | — | 29 | 17 | — | — | — | — | 5 | 1 | — | 52 | 6.3 | — | — | — | 1 | — | — | 2 | 3 | 0.4 | 184 | 22.3 | |
| Stepney | 232,010 | — | 35 | 36 | — | — | — | — | 5 | — | — | 76 | 4.3 | — | — | — | 4 | — | — | 3 | 7 | 0.4 | 447 | 25.1 | |
| Poplar | 143,443 | — | 12 | 14 | — | — | — | 1 | 4 | 1 | — | 32 | 2.9 | — | — | — | 2 | — | — | 2 | 4 | 0.4 | 325 | 29.5 | |
| <i>South Districts:</i> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark | 167,936 | — | 34 | 46 | — | — | — | 1 | 15 | 1 | — | 97 | 7.5 | — | 1 | 1 | 2 | 2 | — | 2 | 8 | 0.6 | 384 | 29.8 | |
| Bermondsey | 107,635 | — | 24 | 22 | — | 1 | — | — | 3 | — | — | 50 | 6.1 | — | — | 1 | 2 | — | — | 1 | 4 | 0.5 | 237 | 28.7 | |
| Lambeth | 272,038 | — | 45 | 27 | — | — | — | 1 | 3 | 1 | — | 78 | 3.7 | — | — | 4 | 3 | 1 | 2 | 1 | 6 | 17 | 0.8 | 595 | 28.5 |
| Battersea | 150,023 | — | 20 | 15 | — | — | — | — | 4 | — | — | 42 | 3.6 | — | — | 3 | — | 3 | — | — | 6 | 0.5 | 341 | 29.6 | |
| Wandsworth | 300,787 | — | 34 | 18 | — | — | — | 2 | 8 | 1 | — | 65 | 2.8 | — | — | — | 1 | — | — | 2 | 3 | 0.1 | 561 | 24.3 | |
| Camberwell | 239,461 | — | 31 | 35 | — | — | — | — | 6 | — | — | 73 | 4.0 | — | — | — | 1 | 1 | — | 4 | 7 | 0.4 | 467 | 25.4 | |
| Deptford | 103,527 | — | 25 | 26 | — | 1 | — | — | 5 | — | — | 57 | 7.2 | — | — | 1 | 4 | — | — | 5 | 0.6 | 226 | 28.5 | | |
| Greenwich | 80,440 | — | 18 | 27 | — | — | — | — | 2 | — | — | 47 | 6.8 | — | 1 | 1 | 1 | — | — | 1 | 4 | 0.6 | 163 | 23.5 | |
| Lewisham | 161,405 | — | 14 | 23 | — | — | — | — | 3 | 2 | — | 42 | 3.4 | — | — | 1 | 1 | 1 | — | 1 | 4 | 0.3 | 294 | 23.7 | |
| Woolwich | 131,942 | — | 12 | 33 | — | 2 | — | — | 2 | 1 | — | 50 | 4.9 | — | — | 1 | — | — | — | 2 | 4 | 0.4 | 249 | 24.6 | |
| Port of London | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |

* Including membranous croup.

Lewisham, 24.2 in the City of London, 24.3 in Fulham, and 24.3 in Wandsworth, to 32.5 in the City of Westminster, 33.9 in Hammersmith, 35.7 in St. Marylebone, 36.2 in Finsbury, 36.7 in St. Pancras, and 46.5 in Holborn. The 8809 deaths from all causes included 170 which were referred to the principal infectious diseases; of these, 30 resulted from measles, 18 from scarlet fever, 51 from diphtheria, 14 from whooping-cough, 1 from enteric fever, and 56 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in Holborn and the City of London. Among the metropolitan boroughs the lowest death rates from these diseases were recorded in Hampstead, Finsbury, Wandsworth, and Lewisham; and the highest death-rates in Hammersmith, Fulham, Chelsea, St. Marylebone, Stoke Newington, and Shoreditch. The 30 deaths from measles were less than a fifth of the average number in the corresponding period of the five preceding years, and included 6 in Fulham, 5 in Hammersmith, 4 in Lambeth, 3 in Paddington, and 3 in Battersea. The 18 fatal cases of scarlet fever were equal to the average number; of these, 3 belonged to Lambeth and 2 to Fulham. The 51 deaths from diphtheria were 10 below the average; this disease was proportionally most prevalent in Chelsea, St. Marylebone, Stoke Newington, Hackney, and Deptford. The 14 fatal cases of whooping-cough were about a ninth of the average number; of these, 2 belonged to St. Pancras, 2 to Southwark, and 2 to Lambeth. One death from enteric fever was registered during the month, against an average of 9 in the corresponding period of the five preceding years. The 56 deaths from diarrhoea and enteritis among children under 2 years of age were 13 less than the average; of these, 6 belonged to Lambeth, 5 to Islington, 4 to Hammersmith, 4 to St. Marylebone, 4 to Shoreditch, and 4 to Camberwell. In conclusion, it may be stated that the aggregate mortality from these principal infectious diseases in London during February was 62 per cent. below the average.

(Week ended March 15th, 1919.)

English and Welsh Towns.—In the 98 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 35.7 and 31.9 in the two preceding weeks, further declined to 26.4 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 21.4, or 5.2 per 1000 below that recorded for the previous week; among the remaining towns the rates ranged from 8.1 in Eastbourne, 10.7 in Acton, and 12.7 in Tynemouth, to 44.8 in Smethwick, 45.5 in Middlesbrough, 49.4 in Stoke-on-Trent, 53.3 in Bury, and 55.5 in Barnsley. The principal epidemic diseases caused 186 deaths, which corresponded to an annual rate of 0.6 per 1000, and included 64 from measles, 41 from whooping-cough, 38 from diphtheria, 29 from infantile diarrhoea, 9 from scarlet fever, 4 from enteric fever, and 1 from small-pox. Measles caused a death-rate of 1.3 in Sheffield, 1.4 in Ilford, 1.5 in Southend-on-Sea, 4.8 in Middlesbrough, and 5.6 in Rotherham; and whooping-cough of 1.9 in Stoke-on-Trent. The fatal case of small-pox belonged to the metropolitan borough of St. Pancras. The deaths attributed to influenza, which had been 3054, 3889, and 3218 in the three preceding weeks, further fell to 2320, and included 435 in London, 157 in Birmingham,

117 in Manchester, 93 in Liverpool, 71 in Leeds, and 67 in Salford. There were 5 cases of small-pox, 1020 of scarlet fever, and 1153 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5, 1062, and 1182 at the end of the previous week. The causes of 56 deaths in the 98 towns were uncertified, of which 16 were registered in Birmingham, 5 in Gateshead, 4 in Liverpool, and 3 each in Stoke-on-Trent and Blackpool.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 40.0 and 34.5 in the two preceding weeks, further declined to 28.1 per 1000. The deaths from influenza numbered 39, while in 257 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 62 and 450 respectively. The 701 deaths in Glasgow corresponded to an annual rate of 32.7 per 1000, and included 35 from whooping-cough, 12 from measles, 4 from infantile diarrhoea, 3 from diphtheria, and 2 from enteric fever. The 152 deaths in Edinburgh were equal to a rate of 23.6 per 1000, and included 10 from whooping-cough, 4 from diphtheria, and 1 from infantile diarrhoea.

Irish Towns.—The 371 deaths in Dublin corresponded to an annual rate of 47.8, or 15.2 per 1000 below that recorded in the previous week, and included 104 from influenza, 3 from scarlet fever, 2 from measles, and 1 each from diphtheria and infantile diarrhoea. The 261 deaths in Belfast were equal to a rate of 33.9 per 1000, and included 2 from infantile diarrhoea and 1 from diphtheria.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

At a meeting held at the West London Hospital on March 7th, with Lieutenant-Colonel E. M. Wilson, C.B., C.M.G., in the chair, the West London triennial medal was presented to Surgeon-Commander Francis Bolster, R.N., for heroism during the battle of Jutland.—Dr. F. G. Crookshank read a paper entitled "The Importance of Symptoms," the author stating that although during the last 30 years almost incredible advances in surgery had been achieved, and in tropical medicine vast new tracts had been explored, in ordinary medical practice progress had been but slight. The tendency had been to discard symptoms as guides to diagnosis and treatment, and to place reliance instead on mechanical, chemical, and biological tests. But since what we call particular diseases are in reality mental concepts of special symptoms, linked or correlated by ideas of particular kinds of causes, known or postulated, the study of symptoms should take precedence over investigation of the secondary organic changes and even of the special causal agents. Social reformers recognised this better than doctors; for they directed campaigns, not against organisms as the cause of the malady, but against the circumstances which favoured the disorderly reaction.—A discussion followed.

Correspondence.

"Audi alteram partem."

THE LOWER UTERINE SEGMENT AND UTERINE TENDONS.

To the Editor of THE LANCET.

SIR,—In his paper on the above subject in THE LANCET of March 8th Professor Hastings Tweedy states: "Gynaecologists are, or should now be, agreed that the uterus owes its stability to its connexion with the fibromuscular bands which surround the cervix at the level of the os internum and radiate in all directions to their attachments in the pelvis." Professor Tweedy calls these structures the "uterine tendons"; believes they support the uterus; that they keep the uterus in equilibrium, and "take up all abdominal strain"; and that "the cervix lying beneath them is thus freed from pressure." Professor Tweedy states that these structures behave "as tendons do in other parts of the body"—whence the name he gives. On *a priori* grounds this is unacceptable; for they have not the same structure as tendons. At this time of day we are not going to believe that tissues of a different structure, and, indeed, of a different order, behave similarly. Without questioning their continued existence during pregnancy, which there is reason to doubt, he refers to them in connexion with the formation of the lower uterine segment in that condition. And he makes some statements, which, I think, show the invalidity of his position. The following argument may be constructed from them: 1. The tendons of the uterus are inserted into the organ at the junction of the cervix and body of the uterus, and "constitute the one and only division between" these two parts. 2. "When pregnancy occurs the internal os opens and the ovum finds room for its increasing growth in the upper region of the cervix immediately beneath the uterine tendons." 3. "The opening of the os permits a slackening of the fibrous diaphragm"—which is made up in part by these tendons. 4. Therefore, with the occurrence of pregnancy, the cervix sinks in the pelvis—a conclusion which is not in harmony with fact.

Further, like many writers with a similar point of view, Professor Tweedy, in discussing the statics of the non-pregnant uterus, ignores the rôle of adjacent parts. He takes no note of the bladder, which—it is known—with its variation in volume, influences the position of the uterus (both of body and of cervix). Nor does he refer to what keeps the bladder in place. The idea that the "tendons of the uterus" do this and that they take up all abdominal strain is untenable in the presence of the results of panhysterectomies as done for carcinoma, and is shown to be untrue by the manometer. When the patient coughs, a great rise of pressure in the vagina is found to occur. This would not happen if the "tendons of the uterus" sufficed to resist the visceral downthrust. And after Wertheim's operation the tendons of the uterus do not exist, yet the visceral downthrust is met. Such considerations show at once that the cervix does not normally "escape pressure" by lying beneath a portion of the uterine tendons, as Professor Tweedy avers.

Another statement in this paper calls for comment. The author states that "in procidentia uteri"—I suppose he means by that partial prolapse of the uterus, the cervix being outside whilst the body of the uterus is within the pelvis—an hypertrophy of the supravaginal portion of the cervix occurs. "In spite of its greater length, its diameter," he says, "does not diminish, which clearly shows that the process is one of hypertrophy." In your annotation on the paper you, Sir, do not accept this statement, and I think the large majority of gynaecologists will agree with you. The thinness of the part referred to as felt on examination, and the very great rapidity with which a shortening of the organ occurs on replacing the prolapse, show that the statement is not true. The change is not an hypertrophic change, but with the elongation of the uterus there is a corresponding diminution in sectional cross area.

It is commonly believed that this elongation is due to stretching, and your annotation refers to it as such. It is thought that some force keeps the body of the fundus of the uterus in place within the pelvis, whilst some other force drags the cervix down (e.g., gravity). I submit that the

weight of the cervix, when we come actually to estimate it, cannot possibly be supposed to cause this elongation; and, what other force can be in operation? The real explanation, I am sure, is that the part of the cervix (or it may be of the body of the uterus) at the aperture of exit from the pelvis is constricted—just like the rectum and vagina at this place in the normal, and just like the part of the bladder similarly situated in cystocele, causing an hour-glass shape of that organ. With this constriction (which prevents the advance of the prolapse) the fundus and cervix are naturally caused to recede from the place of constriction and so from each other, whereby the organ becomes longer.

I am, Sir, yours faithfully,

Rugby, March 14th, 1919.

R. H. PARAMORE.

EPISTAXIS AND HÆMOPTYSIS IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—I would like to draw the attention of your readers to the value of pituitrin and infundin in epistaxis and hæmoptysis, so common in the present epidemic of influenza. Using 0.5 c.cm. of one or other preparation hypodermically, it has been unnecessary to resort to any local treatment other than cold sponging of head and neck. Generally the hæmorrhage stops almost immediately, and is followed in some hours by another and very slight attack, which, in my cases, has not been repeated. The use of pituitrin in these cases has given the patient a feeling of well-being which suggests to me that a previous internal secretory exhaustion had been present. It would be interesting to know if your readers have had similar experiences.

I am, Sir, yours faithfully,

W. P. KELLY, F.R.C.S.Irel.

Arklow, Co. Wicklow, March 12th, 1919.

THE EPIDEMIC OF SEPTIC PNEUMONIA.

To the Editor of THE LANCET.

SIR,—In the various reports of septic pneumonia cases which have appeared in THE LANCET I have not seen any allusion to a peculiar ashen grey sputum observed in the following cases, the notes of which may, therefore, be worthy of record:—

CASE 1.—Seen by me in consultation on Feb. 14th, a female, aged 25, with history of five days' illness, which came on gradually with symptoms of gastro-intestinal disturbance, vomiting, slight diarrhoea, &c. Typhoid was suspected. Temperature 103.5° F. (had been 105°), respirations 45, pulse 130. There was consolidation with bronchial breathing over the whole of the left lung. The sputum was an ashen grey colour resembling a thick mixture of cigar ash; the tongue and lips were dry and coated; the patient was listless and indifferent, but fully conscious, and answered questions intelligently and concisely. She died on the following day.

CASE 2.—Seen by me in consultation on Feb. 18th and on three subsequent occasions, a man, aged 29, with consolidation over the left base, hurried breathing, &c. This patient was also markedly listless, with dry and coated lips and tongue, and a similar ashen grey sputum as described in Case 1 was observed. This case appeared to improve greatly under injections of mixed vaccine, but subsequently symptoms of apical pneumonia developed, and he died on March 4th.

I am, Sir, yours faithfully,

Welbeck-street, W., March 17th, 1919.

JAMES SEARSON.

Dr. Saint René Bonnet, M.D. Paris, M.R.C.S. Eng., who is now discharged from military duties, has resumed his practice as consulting physician at Chatel-Guyon-les-Bains, Auvergne, France.

Mr. Muirhead Bone, who has been an official artist since August, 1916, and whose war drawings we have often taken occasion to praise in these columns, proposes to set aside the proceeds from the sale of his signed lithographs in order to purchase the work of other artists for presentation to the Imperial War Museum, where his own work will be preserved. The sum thus generously given away amounts to about £2000.

CHARING CROSS HOSPITAL MEDICAL SCHOOL: POST-GRADUATE STUDY.—The special course, commencing on April 7th, will include lectures and demonstrations of general and special medical and surgical subjects, bacteriology, and radiology. Affiliation with the Royal Westminster Ophthalmic Hospital having been completed, the ophthalmic clinic there is now open to students. Further details in our advertisement columns.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Ministry of Health Bill.

THE Standing Committee of the House of Commons has now made considerable progress in the consideration of the Ministry of Health Bill.

The Committee began consideration of the Bill on Thursday, March 13th, Sir A. WILLIAMSON being in the chair.

Clause 1, which deals with the establishment of a Minister of Health, was agreed to.

Clause 2 provides that it shall be the duty of the Minister to take all such steps as may be desirable to secure the effective carrying out and co-ordination of measures conducive to the health of the people, including measures for the prevention and cure of diseases, the treatment of physical and mental defects, the collection and preparation of information and statistics relating thereto, and the training of persons engaged in health services.

Powers of Minister of Health.

Major McMICKING moved an amendment designed to limit the powers of the Minister of Health to the powers transferred to the Minister. He said that they had to remember that Governments came and went, and they had to provide against any chance of future Ministers exercising new powers under this Bill which were not covered by the existing law.

Major J. W. HILLS said that what he was apprehensive of was that under this clause the Minister would get power to enforce treatment or to make regulations for which otherwise he would have to get Parliamentary powers. He instanced as an example the well-known regulation, 40 D.

Major ASTOR (Parliamentary Secretary to the Local Government Board) said that people had read Clause 2 and interpreted it in different ways. Some hoped it would give the Minister new powers to do all sorts of new things, while others feared that it might give the Minister those powers. In view of the fact that there was some doubt about the meaning of the clause as now drafted, he wished to explain that there was no intention whatever on the part of the President of the Local Government Board to give or take, or to try to give or take any new powers. The clause was governed by the word co-ordination. The intention of the Government was to transfer to one Department under one Minister the existing powers relating to health matters. The language of the clause simply suggested, without pretending to give any detailed list of, the powers it was proposed to transfer to the Minister of Health. But it would be his duty to take an interest in other matters concerning health the control of which would not necessarily be transferred to him, as, for example, medical education. It should also be borne in mind that Parliament in the past had given certain powers to local authorities, and all the Local Government Board did was to supervise the exercise of those powers. The idea of this Bill was not a centralised bureaucracy, but rather decentralisation of local administration. If the honourable Member would withdraw his amendment he would move a form of words which would convey what he had in his mind. This form was as follows: After the word Minister insert "in the exercise of any powers and duties transferred to him by or in pursuance of this Act."

Major McMICKING withdrew his amendment, and the amendment suggested by Major Astor was agreed to.

Notification of Venereal Disease.

Mr. STEWART moved an amendment to include the notification of venereal disease among the powers conferred on the Minister of Health. They had seen the lamentable results as regards the nation's physique as shown by the medical examination of recruits for the Army, and he thought it was a mistake when they had an opportunity as they had in this Bill if they did not attack the enemy of venereal disease in front and do great good to coming generations. It was too important a matter to be interfered with by any feelings of false modesty.

Dr. ADDISON (President of the Local Government Board) pointed out that his department already had powers to make venereal disease notifiable, but as a matter of fact the problem at the present time was to provide a sufficient number of early treatment centres. The governing consideration was to provide such facilities for treatment that the patients would readily go and make use of it. He was afraid that there was overwhelming evidence that compulsory notification might keep large numbers from taking advantage of these early treatment centres, which were the very things they wanted to encourage. He hoped therefore that the amendment would not be pressed. There were now about 140 treatment centres throughout the country.

Mr. STEWART said that, while he was unconvinced by Dr. Addison's speech, he would withdraw the amendment.

Health Propaganda: Voluntary Hospitals: Subsidy of Labour of Consumptives.

Captain BARNETT moved an amendment to make explicit the right and duty of the Minister of Health to run health propaganda.

Major ASTOR said that, while in sympathy with the intention of the amendment, he thought it would be out of place in this clause.

Dr. ADDISON said that steps had been taken within the last month to assist propaganda in connexion with venereal disease. Within the last two months they had contributed £8000 towards propaganda of a sensible and practical kind in regard to that and allied matters.

The amendment was withdrawn.

The CHAIRMAN ruled out of order an amendment standing in the name of Mr. Swan, Mr. Stith, and Mr. Thomas, which related to the establishment of national hospitals and other institutions for the treatment of the sick and disabled, and the nationalisation of existing institutions dependent upon voluntary contributions for their maintenance. Clause 2, he said, did not seek to confer new powers, as this amendment did, and the proper method would be to put down a new clause.

Major FARQUHARSON moved an amendment to include "scientific investigation" among the duties imposed upon the Ministry of Health.

It was urged that this subject had better be discussed in connexion with the question of medical research, which would arise later, and on this understanding the amendment was withdrawn.

Mr. GODFREY LOCKER-LAMPSON had an amendment on the paper to include the subsidy of the labour of consumptives within the powers of the Ministry of Health.

The CHAIRMAN ruled it out of order, as it ought really to be the subject of a new clause.

Major ASTOR pointed out that if the subsidy was a part of treatment the Government could deal with it already. If, however, it involved new powers beyond that it was out of order. This matter was one which the Government had very much at heart, and the President of the Local Government Board had set up one committee and was setting up another to look into the different aspects of this important matter. He hoped the amendment would be withdrawn, since the Government fully realised that more had got to be done both as regards civilians and ex-soldiers. It was particularly the latter for whom the new committee had been set up.

The amendment was withdrawn.

Training for Health Services.

Sir P. MAGNUS moved to leave out the words "and the training of persons engaged in health services." It certainly did not need a clause of this kind to give power to the Minister to take an interest in the training of persons engaged in health services. But as the clause now stood it might be interpreted as giving the Minister power to interfere with the courses of instruction in the medical schools attached to hospitals as well as those attached to universities. He did not think that was the intention of the Government, therefore these words ought to be omitted.

Major ASTOR said there was no intention implied or expressed to transfer the functions of the General Medical Council or any of the functions of the President of the Board of Education in connexion with the grants to universities and schools. The wording of the clause merely showed that when the Ministry was set up it was hoped that it would keep in touch with the other bodies that were dealing with these matters. He did not think that there was anything endangering the training of the medical profession in the clause as now drafted.

The amendment was withdrawn.

Major ASTOR moved to leave out the words "engaged in" and to insert the word "for," making it read "and the training of persons for health services."

Major FARQUHARSON opposed the alteration, which, he said, opened up all sorts of possibilities, which he was certain would lead to great conflict in the future.

Sir KINGSLEY WOOD said he hoped that honourable Members would not press opposition to this very simple amendment, which was obviously a desirable one, and which he was positive was in the interests of all people who were interested in the Bill.

The amendment was agreed to.

Conscientious Objections.

Major HILLS moved at the end to add the words "provided nothing in this section shall compel any person to receive treatment who makes a statutory declaration that upon conscientious grounds he objects to medical treatment." He said that he thought it would be a great disaster if an Act of this sort, which he most cordially supported, were to break down upon a question of this kind. If persons did not want

to undergo any special form of treatment no Act of Parliament would make them do so. In his judgment there were no measures more clearly justified on medical and on social grounds than the Vaccination Acts. Yet before conscientious objection was allowed they had local authorities refusing to enforce the Acts and local authorities returned on the sole issue as to whether the Act should be enforced or not, and they got a narrower ambit of the Acts because of it. They would be doing a very beneficial thing if from the start they said to the people who for some reasons, medical or religious, sincerely objected to treatment, "the State will not compel you."

Dr. ADDISON said it was quite obvious that they could not force treatment on people which they did not wish to accept, and he would be the last person in the world to try to do so. But that was quite a different thing from putting a proviso of this kind in the Act. For instance, the community had said for its own protection that people suffering from certain infectious diseases must be isolated. He was advised that if this amendment were accepted it would cut right across the powers which already existed in respect to infectious fevers. He was quite sure his honourable friend did not want to do that any more than he did. The Government had no power now to force treatment on unwilling persons, and they were given no fresh powers under this clause.

Sir A. WARREN said that he was not in favour of allowing persons suffering from infectious disease to run amok or go about at their own sweet will, but there were a large number of persons who had conscientious scruples to the enforcement of particular kinds of treatment. Might he say, with great respect as a layman, that such people think that they have just as efficacious means of treatment as a bottle of doctor's medicine.

Colonel WEIGALL said that although a number of persons had these conscientious objections he felt that unless they had some powers of compulsion they would produce a state of chaos.

Sir COURTNEY WARNER thought that the amendment would be a great blot upon the Bill, and would tend to a weakening of its powers.

On a division the amendment was rejected by 33 votes to 14. Clause 2 as amended was then passed.

Transfer of Powers and Duties.

Clause 3 deals with the transfer of powers and duties to and from the Minister.

Mr. LESLIE SCOTT moved to add the transfer of "all the powers and duties of the Secretary of State under the Lunacy Acts, 1890 to 1911, and the Mental Deficiency Act, 1913." No difficulty, he said, would stand in the way of this transfer, and the only chance of getting these Acts linked up with the general medical service of the country was through such a transfer as he advocated.

Major ASTOR said he did not think that it would be in accordance with the intentions of Parliament that all the powers should be transferred, because some of them affected the liberty of the subject, and these were placed under the Lord Chancellor or the Home Office.

The amendment was withdrawn.

Sir A. WARREN moved as an addition to the proviso that all the powers and duties of the Local Government Board should be transferred the following: "except as relating to the administration of the Poor-law, which administration shall be transferred to the Home Office."

Sir KINGSLEY WOOD said that the amendment, if accepted, would mean that all the persons working under the present system would be taken away from the administration of relief. If they desired to disentangle the medical side of the Poor-law it would take considerable time. They must either postpone the Ministry of Health until the medical side of the Poor-law was disentangled or they must take over the Poor-law.

After some discussion the amendment was withdrawn.

Medical Research.

Sir P. MAGNUS moved that in addition to taking over all the powers and duties of the Insurance Commissioners and the Welsh Insurance Commissioners the clause should include "the duties hitherto performed by the Medical Research Committee." Medical research in the future would, he said, depend largely on the result of discoveries made by research committees; and research and methods of research must form an important part of medical education wherever it might be carried on, either in universities or elsewhere. He need only refer to the discovery of radium in France, and of the Roentgen rays in Germany, which had had such an important influence on medical practice. It was very difficult to distinguish between researches carried on for the purposes of pure science and those which might happen to be applicable to medical science or medical education. For that reason it seemed to him most desirable that the Ministry of Health should have under its own control and direction a research department to which it could refer

problems as they arose. He saw no valid reason why the Research Department should not be at once affiliated to the new Ministry.

Sir KINGSLEY WOOD pointed out that they were dealing with a Bill that applied to England and Wales alone. As the President of the Local Government Board had stated in the House of Commons, medical research was not a matter of geographical limits, and he thought all of them were hoping that medical research in the future would not be limited to this country alone, but might prove to be a truly Imperial department. If that were so the proper department which should supervise it, at any rate at the present time, was the department named in the Bill—namely, the Privy Council.

Major HILLS urged that men of science should be entirely free and independent to carry on research in their own way. Research could only take place by conflict with existing institutions. The one administration with which the Research Department would be in conflict if progress was to be made was the Ministry of Health. The Medical Research Committee under the Privy Council had done some extraordinarily good work, and he submitted that it would be a step backwards if that work were taken away from them.

Lieutenant-Colonel RAW strongly urged that the Research Committee should be brought under the control of the Ministry of Health. The Bill would not be complete if the Ministry had not at its immediate disposal the very best advisory research committee. In the event of a great epidemic the Ministry ought to be able to ask its own Research Committee to investigate the disease instantly. They could not do that if the Research Committee remained outside the Ministry.

National and Imperial Medical Research.

Major FARQUHARSON thought that they might hope that the Medical Research Committee would have a very much wider and more effective scientific horizon if it were placed within the jurisdiction of the Privy Council than if it were attached to the Ministry of Health. He was perfectly certain that the medical men—of a committee of whom he had the honour to be secretary—did not wish to press for the inclusion of the Medical Research Committee within the Department of the Ministry of Health, but they did press for some real live thing which within the walls of the Ministry might take the place of the Research Committee. He urged the Government to insert in as simple language as they pleased such words as would effect that compromise, which he thought would completely meet the view of the medical men.

Sir WILLIAM WHITLA also believed that under the Privy Council medical research would have a wider scope than under the Ministry of Health. He advocated that by way of compromise the Ministry should have its own research department. There could not possibly be too much competition in original research. He was not clear whether the Minister of Health could get large grants-in-aid for the purpose of setting up a research department, but if he could he thought the Committee should not hesitate for a moment to start on the project of two departments of research, one under the Privy Council and one under the Ministry of Health.

Sir KINGSLEY WOOD pointed out that the Local Government Board already had its research work and this would be transferred under the Bill.

After further discussion,

Major ASTOR said it was a fallacy to imagine because in the illustrative words in Clause 2 the word "research" was not specifically included that therefore it was excluded. The Minister of Health, like the President of the Local Government Board, would be able to do his research in his own laboratories. He had that power now. The money that was going to be devoted to research in the future was going to be a special vote. They wanted the Ministry of Health to go on with its own research in all parts of the kingdom, but over and above that they wanted the Research Committee, which was international and inter-departmental, to continue. There would be Ministerial responsibility, but let them not break up the Medical Research Committee, which dealt not only with England and Wales but with the whole of the United Kingdom and the whole Empire. He thought that Major Farquharson had made a very fair suggestion, and he would put it to the President that on the Report stage they should insert the following words: "the initiation and direction of research."

Sir P. MAGNUS, on this understanding, withdrew his amendment, and also a further one which provided for "the medical inspection and treatment of children and young persons."

The School Medical Services.

On Tuesday, March 18th, the Standing Committee of the House of Commons further considered the Ministry of Health Bill. Sir ARCHIBALD WILLIAMSON was in the chair.

Mr. G. LOCKER-LAMPSON moved an amendment to Clause 3 to transfer to the Ministry of Health "all the powers and duties of the Board of Education with respect

to the medical inspection and treatment of children and young persons."

Mr. FISHER (President of the Board of Education) resisted the amendment. The Board of Education were anxious to coöperate with the new Ministry of Health, but it would be difficult and inadvisable to cut out School Medical Services from the Board of Education. The administration of the health services was an integral part of school life and part of the functions of the local Education Committees.

Sir P. MAGNUS said that the arguments of the President of the Board of Education went to the very root of the Bill, whose object was to take over all the various health services from the different departments of State so as to consolidate them and prevent overlapping. So far as gymnastics were concerned, he saw no reason why they should not remain in the hands of the Board of Education, because they did not require the skill of the Ministry of Health to deal with. If these educational health services were not transferred they would have medical men and nurses under the Board of Education overlapping with those under the Ministry of Health.

Sir RYLAND ADKINS said there were perfectly genuine arguments on both sides of this question. It would be quite impossible to separate public health considerations from education. But on the whole he asked the Government and the Committee to arrange for the transfer of these powers to the Ministry of Health at once.

Dr. ADDISON (President of the Local Government Board) said that the functions that were to be transferred under the Bill were divided into two categories, viz. (1) those which were to be transferred forthwith, and (2) those which it would be lawful to transfer hereafter. As an administrative proposition it would be a great mistake to thrust upon the Minister of Health right away all these duties because he would become overloaded and the administrative machine might tend to break down. The next step was to formulate a general health policy, the establishment of clinics, laboratories, midwifery, &c., and this would be a gigantic task and one that was quite sufficient to put upon the shoulders of the Minister at first, and he asked the Committee not to burden him with having to discharge these functions as well. As regarded physical training, he thought it was impossible administratively to divorce it from inspection.

Sir E. JONES said that he thought that the control of the medical men in the various localities, and probably some of the clinics already set up by the Education Committees, could eventually be put under the Ministry of Health. They must leave the Minister time to work these things out into a coördinated system and not plunge headlong into a proposal of this kind, which would produce difficulties in every school and undo much of the good work that had been done.

Sir WATSON CHEYNE said that he was much disappointed by the speech of the President of the Board of Education. He confessed that he could not see what difficulty there was in transferring these powers to the Ministry of Health. He had had a good deal of experience of schoolmasters, and he was not sure that he would trust them to be the judge as to what sort of physical exercise was good for a boy. What they ought to aim at was the best system, and if it did upset the local authorities he was afraid they must make up their minds to it.

Amendment Carried.

Mr. FISHER said he hoped to make a proposal which would mitigate some of the bitter feelings which had been raised by his first speech. The School Medical Service had been a most successful part of the administration of his department. The Committee ought to think before they interfered with a department which was doing magnificent work, which had secured the confidence of the local authorities. Under the Education Act, 1918, special stress was laid upon the physical side of education. They were therefore particularly interested not to interfere with the excellent work which was being done and which was to get fresh encouragement from the new Education Act. He proposed to the Committee that words should be inserted to make it possible to transfer these powers by an Order in Council.

There were cries of dissent from all parts of the Committee room at Mr. FISHER's proposal.

Major BARNSTON said that it should be realised that this was not a matter of detail, but one of principle.

Captain BARNETT said that to bring forward half baked legislation of this kind which had not received proper consideration from the Government amounted, in his opinion, to an abdication of the rights and duties of the House of Commons.

Dr. ADDISON said there was no desire to put before Parliament a Bill that was a sham. But the reason for the Bill appearing in its present form was that it was considered to be the most practical and businesslike proposal. If the amendment were carried it would not be practicable for the Minister to set up and propose to Parliament that general extension of the health services of the country, and at the same time to assume all these

other duties. He would suggest that Mr. Fisher's proposal was a reasonable one ("No, no"). If the amendment were carried he would suggest that the Minister should be able to review the question between now and the report stage so as to see whether it would work administratively, and, if necessary, insert words on report to meet the difficulties which he was afraid the amendment would involve.

The amendment was carried without a division.

Medical Supervision of Factories and Workshops.

Sir P. MAGNUS moved an amendment to transfer the powers and duties of the Home Office relative to public health, including the sanitary condition of factories and the investigation and prevention of industrial diseases to the Ministry of Health.

Dr. ADDISON resisted the amendment and said that the question of industrial conditions should come under the Ministry of Employment as the Ministry of Labour would ultimately become. These matters involved controversies which were inseparable from industrial administration.

The amendment was withdrawn.

Clause 3 was still under consideration when the Committee adjourned till Thursday.

Nurses' Registration Bill.

Captain BARNETT has introduced in the House of Commons a Bill "to provide for the State registration of nurses." It has been read a first time.

The Housing Bill.

Dr. ADDISON (President of the Local Government Board), on Tuesday, March 18th, presented a Bill to amend the enactments relating to the housing of the working classes, town planning, and the acquisition of small dwellings. It has been read a first time.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 12TH.

Vaccination.

Mr. WATERSON asked the President of the Local Government Board whether he was aware that there was a growing opinion that, in consequence of altered social conditions and improved sanitary administration, it was not now necessary to enforce vaccination; and whether he would consider the advisability of introducing legislation with a view to the repeal of the compulsory clauses of the Vaccination Acts.—Major ASTOR (Parliamentary Secretary to the Local Government Board) replied: I have no information to show that public opinion has changed. My right honourable friend is not contemplating legislation.

Mr. LUNN asked the President of the Local Government Board, in view of the tendency of modern methods of vaccination to produce only faint scars or marks, what value the Government now attached to scars or marks as an evidence of efficient vaccination.—Major ASTOR replied: Efficient vaccination of children by modern methods produces scars or marks which have a definite and characteristic appearance and are readily recognisable. In modern practice the appearance, number, and area of marks or scars furnish evidence of the degree of protection afforded by vaccination.

Small-pox.

Mr. TYSON WILSON asked the President of the Local Government Board how many cases of and deaths from small-pox occurred in England and Wales during the year 1918; how many of the cases and deaths were under 10 years of age; and how many of the cases and deaths, under 10 and over 10 years of age, were vaccinated and unvaccinated, respectively.—Major ASTOR answered: In 1918 there were in England and Wales 53 cases of small-pox and two deaths, in both of which, however, the diagnosis was open to some doubt. There were 12 cases under 10 years of age. The two fatal cases were over 10. Of the total cases under 10 one was vaccinated and 11 unvaccinated. Of the total cases over 10, 33 were vaccinated and 8 unvaccinated. In addition to the 53 cases there were 13 cases imported in ships.

THURSDAY, MARCH 13TH.

Lymph for Public Vaccination.

Mr. FREDERICK GREEN asked the President of the Local Government Board whether the Government were prepared to guarantee that the lymph issued by them for public vaccination purposes would not produce unintended complications; and, in the event of such complications arising, would they consider the advisability of giving compensation to the sufferers.—Mr. PRATT (for Dr. ADDISON) replied: The lymph issued from the Government lymph establishment to public vaccinators is prepared by methods which prevent it from being contaminated by septic organisms. In the relatively rare cases where vaccination is complicated by the occurrence of septic conditions the complications usually result from accidental infection of the vaccinated surface

and are not attributable to the lymph. I cannot accept the principle that compensation should be paid by the Government in cases where complications arise after vaccination.

Salvarsan Substitutes.

Mr. FREDERICK GREEN asked the President of the Local Government Board if he would state what guarantee the Government had that the remedies approved by them as substitutes for salvarsan were exactly similar, or even approximately similar, to the remedy as discovered and patented by Ehrlich.—Mr. PRATT (for Dr. ADDISON) answered: All the approved substitutes, except galy, are manufactured under licences issued by the Board of Trade for the express purpose of allowing the manufacturers to employ the processes which are used in the manufacture of the original salvarsan, and which are protected by patents. The presumption is therefore that the drugs produced by these manufacturers are similar to the original article. For the protection of the public all the approved substitutes are tested on behalf of the Medical Research Committee before being placed on sale. I understand that the Salvarsan Committee appointed by the Medical Research Committee have already considered the question, and that they will shortly issue a report in regard to it.

Mr. ROBERT YOUNG asked the President of the Local Government Board whether he would consider the advisability of appointing a committee of experts to investigate the whole question of the supposed value of salvarsan as a cure for syphilis, seeing that it had been stated by eminent authorities on the use of salvarsan and its substitutes that deaths had taken place through its use.—Mr. PRATT (for Dr. ADDISON) replied: A special committee was appointed in 1918 by the Medical Research Committee to consider the matters referred to in the question. It comprises representatives of the Medical Departments of the Admiralty and War Office, of the Medical Research Committee, and of the Local Government Board. Its constitution and terms of reference are set out in the Board's V.D. Circular 22. With that circular the Board, at the request of the Medical Research Committee, circulated copies of a memorandum prepared by the Salvarsan Committee, in which a definite opinion as to the value of salvarsan was expressed. I am forwarding to the honourable Member copies of these documents.

TUESDAY, MARCH 18TH.

Outbreak of Cerebro-spinal Fever.

Sir C. KINLOCH-COOKE asked the Secretary to the Admiralty whether his attention had been called to the serious outbreak at Cambridge of cerebro-spinal fever among the young naval officers; whether several deaths had occurred at the Military Hospital; and whether he could make any statement on the subject.—Mr. MACNAMARA replied: I regret to say that there has been an outbreak of cerebro-spinal fever amongst the young naval officers at Cambridge. The facts are as follows: Naval officers went to Cambridge on Jan. 31st. On Feb. 5th there were 60 cases of influenza, of whom 54 were treated in one ward in No. 1 Eastern General Hospital. These were all making a good recovery until on Feb. 13th and 14th eight developed cerebro-spinal fever. At this time there was no cerebro-spinal fever in Cambridge and the disease was apparently contracted from a "carrier." Two other cases developed cerebro-spinal fever and the infection of one was traced to a previous case of this disease; the other was contracted outside Cambridge. It will thus be seen that nine out of the ten contracted the disease whilst in No. 1 Eastern General Hospital. Of these ten cases I am sorry to say five have died. All these cases have been isolated and nursed in the Military Hospital at Cambridge and Colonel Griffiths, A.M.S., allowed them to be treated in that hospital and not sent to the usual hospital at Tring, thus saving a long journey by ambulance. The military authorities placed the services of Captain E. H. Shaw, R.A.M.C., military specialist in cerebro-spinal fever, at the disposal of Colonel Griffiths for the treatment, and Surgeon Rear-Admiral Sir Humphry Rolleston was sent up by our medical authorities on receiving the first report from Cambridge and has made frequent visits since. The Medical Research Committee have supplied the special serum used in the treatment. I am advised that the epidemic is considered to be well in hand, and everything possible has been done for the patients. The last case was notified on Feb. 24th at Cambridge, and there have been no fresh cases since March 7th, and that was the one which was infected outside Cambridge.

Demobilisation of Medical Officers.

Major MOLSON asked the Secretary for War (1) whether in view of the fact that doctors and nurses had been demobilised at a slower rate than other ranks he would state whether all field ambulances and casualty clearing stations had been demobilised in areas where hostilities had ceased; (2) whether in view of the fact that medical men and nurses were demobilised at a slower rate than the rest

of the Army during the first four months since the Armistice and that Territorial and temporary commissioned doctors could only be demobilised on application being received from the Ministry of National Service he would give orders to remove that restriction in order to meet the present urgent needs for medical service, and also that the medical men's own applications for discharge be considered.

Lieutenant-Colonel WEIGALL also asked the Secretary for War what was the reason for the slow rate of demobilisation of Army doctors?—Mr. CHURCHILL replied: I was informed that the delay in the more rapid demobilisation of medical officers was in the main due to the fact that since the armistice military hospitals have had to deal with large numbers of repatriated prisoners of war, the greatly increased numbers of enemy prisoners, and with hospital population which was transferred to military hospitals both at home and abroad, on the closing of the auxiliary American hospitals and those belonging to the Dominions. It was also stated that the large number of civil medical practitioners released by the closing of the other hospitals mentioned was not included in any returns of the numbers demobilised. However, as I told the House, I did not consider these reasons sufficient to explain the proportion of medical men and soldiers respectively demobilised. I have therefore given directions for a prompt and more general demobilisation of medical officers from the Royal Army Medical Corps. In consequence, the Minister of National Service has agreed with the War Office that the restricted procedure of selection of individuals for release shall be discontinued. There has not been much time for the fruits of these measures to become apparent, but I may add that, as the result of the directions given, the rate of releases both of doctors and nurses has greatly increased. In the past week, for example, about 700 doctors have been released.

WEDNESDAY, MARCH 19TH.

Gratuities to Temporary Naval Medical Officers.

Sir ROBERT WOODS asked the Secretary to the Admiralty whether war gratuities to temporary naval medical officers would be on the same scale as those to temporary officers of the R.N.R. and R.N.V.R.; and, if not, would he state the reasons for differential treatment.—Mr. MACNAMARA replied: Following the practice of the Army, the gratuities of the temporary naval medical officers holding the rank of surgeon-lieutenant are at the rates of £60 and £50 for each year or part of a year's service for officers of the medical and dental branches respectively. The war gratuities of temporary medical officers above the rank of surgeon-lieutenant are based on their pay and are on the same scale as those of other temporary officers R.N.R. and R.N.V.R. The reason for the differentiation is that temporary surgeon-lieutenants are on special rates of pay, while those above that rank are on service.

Ministry of Health for Egypt.

Sir H. CRAIK asked the Secretary for Foreign Affairs whether any steps had been taken to constitute a Ministry of Health in Egypt as urged by a recent Committee of Inquiry.—Mr. DUDLEY WARD (for Mr. BALFOUR) replied: Administrative changes of considerable importance are already taking place on the lines recommended by the Committee of Inquiry, and other steps are under consideration, but expansion of the Department of Public Health to the full extent urged by the Committee requires further examination by the authorities concerned.

Medical News.

At a special meeting of the President and Fellows of the Royal College of Physicians of Ireland, held on March 14th, Dr. Harold Pringle, chief assistant to the professor of physiology and lecturer in histology, University of Edinburgh, was elected King's Professor of Institutes of Medicine in the School of Physic in Ireland.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS.—The obligation placed upon medical officers of health to furnish particulars of male persons between certain specified ages who have been notified as suffering from tuberculosis to the Ministry of National Service has been rescinded by an Order of the Local Government Board.

LONDON TEMPERANCE HOSPITAL.—The general meeting of members and governors will be held on Thursday next, March 27th, at 3.30 P.M., and at 5 P.M. the forty-sixth annual public meeting will be held in the outpatient hall, when the chair will be taken by the Marquis of Lincolnshire. The speakers will include the Bishop of Willesden, Dr. J. Porter Parkinson, Mr. Arthur Evans, and Sir T. Vezev Strong, chairman of the board of management.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue :—

Previously Reported Missing, now Reported Killed.

Capt. W. C. D. Wilson, R.A.M.C., qualified at Aberdeen in 1915, and thereupon joined up.

Died.

Capt. W. R. Allen, R.A.M.C., qualified at Dublin in 1909, and held appointments at Monkstown Hospital, Dublin, and at the Nottingham City Asylum. Prior to joining up he was assistant medical officer at the Broadmoor Asylum, Crowthorne, Berks.

Capt. H. C. R. Chowdhury, I.M.S.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

THE following additional casualties among the sons of medical men are reported :—

Lieut. C. O. B. Buckmaster, Duke of Cornwall's Light Infantry, died at Belfast of influenza, only son of Dr. G. A. Buckmaster, of Hampstead, London.

Lieut. F. C. Stovin, R.A.F., reported missing April, 1918, since reported by German Red Cross killed in aerial action over German lines, youngest son of Dr. C. F. Stovin, of Westcliff-on-Sea, Essex.

Lieut. H. H. K. Dunlop, R.A.S.C., died in Italy of pneumonia following influenza, youngest son of the late Professor J. Dunlop, of Glasgow.

THE SERVICES.

ARMY MEDICAL SERVICE.

Col. C. K. Morgan relinquishes the appointment of Assistant Director of Medical Services at the War Office.

Col. S. F. Clark, on completion of four years' service in his rank, to be retained on the Active List.

Temp. Col. C. H. S. Frankau (Capt. and Bt. Major, R.A.M.C., T.F.), relinquishes his temporary commission on re-posting.

Major A. B. Smallman to be an Assistant Director-General and to be temporary Lieutenant-Colonel, vice Bt. Col. A. L. A. Webb, C.M.G.

Major G. A. D. Harvey to be a Deputy Assistant Director-General, vice Major A. B. Smallman.

ROYAL ARMY MEDICAL CORPS.

Temp. Major B. G. Coward to be temporary Lieutenant-Colonel and Temp. Capt. R. H. Rigby to be temporary Major whilst employed with the Huddersfield War Hospital.

Temp. Capt. H. D. Robb relinquishes the acting rank of Major on re-posting.

To be acting Lieutenant-Colonels while specially employed: Major A. B. S. Irvine, Capt. (acting Major) A. G. Wells.

The undermentioned relinquish the acting rank of Major on re-posting: Capt. E. A. Strachan, R. P. A. Smith, F. A. Robinson, J. C. A. Dowse; Temp. Capt. W. Anderson, R. S. Renton, C. A. Boyd, W. M. Badenoch, M. W. Baker, G. Buchanan, H. E. McIntyre, A. T. Edwards, W. A. Curry, J. H. Legge, J. B. Cooke, M. W. B. Oliver, S. W. McLellan.

H. Emerson, late temp. Capt. (acting Major), is granted the rank of Major.

Temp. Capt. A. G. Southcombe to be acting Major, whilst commanding troops on a Hospital Ship.

To be acting Major: Capt. P. G. M. Elvery; Temp. Capt. J. M. Clements, O. A. Weller, J. B. Tomblinson, T. Kelly, O. C. Irvine, B. Biddle, E. Scott, G. Wilson, J. W. Tocher, J. G. Ackland, J. Kinton, M. R. MacKay, T. W. Melhuish, L. M. Smith, F. R. Sturridge, G. A. Lilly. Whilst specially employed: Capt. G. W. S. Paterson (Home Hospital Reserve), R. C. Priest; Temp. Capt. E. A. C. Beard, A. C. Pickett, E. A. Lindsay, A. C. Keep.

Capt. W. Tyrrell to be seconded for service with the R.A.F. Late temporary Captains granted the rank of Captain: W. J. Macdonald, T. Duncan, J. Singer.

Temporary Lieutenants to be temporary Captains: J. A. Aitken, J. Loftus, W. Blight, H. C. Sutton, S. Wilton.

Officers relinquishing their commissions: Temp. Lieut.-Col. W. L. W. Marshall, and retains the rank of Lieutenant-Colonel; Temp. Lieut.-Col. J. A. Walt (Lieutenant-Colonel, R.G.A.T.F.); Temp. Maj. E. L. Gowland, D.S.O. (granted the rank of Lieutenant-Colonel); Temp. Capt. (granted the rank of Major) W. G. Johnston, A. H. Spicer, A. B. Cardew, W. T. Hessel; Temp. Capt. (retaining the rank of Captain) J. F. Broughton, J. N. Clark, O. H. Booth, J. F. Dow, V. J. Woolley, A. W. O. Drake, L. H. F. Thatcher, R. H. Smythe, R. Rowlands, T. H. G. Shore, D. M. Ross, W. Templeton, F. P. Wigfield, T. Whitehead, D. S. Robertson, G. D. Laing, W. S. Stalker, J. Robertson, W. J. Paramore, A. T. Moon, D. R. Williams, J. C. Mann, A. Allison, T. A. Watson, J. S. Orlinton, F. J. Allen, B. A. Lumley, W. A. Hishop, G. M. Shaw, O. D. B. Mawson, A. C. Farlinger, J. Cairns, O. E. F. Salt, S. K. Vines, J. J. Boyd.

Temp. Capt. V. J. P. Clifford, on appointment under the Ministry of National Service.

Temporary Lieutenants retaining the rank of Lieutenant: J. D. Russell, T. E. Hill, M. Wheeler, R. M. Rendall, J. Taplin, C. J. Middleton.

SPECIAL RESERVE OF OFFICERS.

Captains relinquishing the acting rank of Major on re-posting: G. Dalziel, R. MacKinnon, W. W. Wagstaffe.

Captains to be acting Majors: W. H. Dye (Hon. Lieut.-Col.) D. J. Armour, A. Winfield, R. H. Williams.

Capt. (acting Major) R. Green relinquishes his commission and retains the rank of Major.

Capt. J. W. Brash and I. G. M. Firth relinquish their commissions and retain the rank of Captain.

TERRITORIAL FORCE.

Major A. Fowler resigns his commission.

Capt. (acting Lieut.-Col.) A. W. B. London and N. C. Rutherford relinquish their acting rank on ceasing to be specially employed.

ROYAL AIR FORCE.

Medical Branch.—Lieut. J. Walker-Brash to be Captain.

The undermentioned are transferred to unemployed list: Lieut. W. Cahill, Capt. R. M. V. Hale, Capt. H. G. Shepherd.

Lieut. O. S. Martin relinquishes his commission and retains his rank.

TERRITORIAL FORCE DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers:—Lieut.-Cols. L. J. Blandford, J. M. Rogers-Tillstone, F. Kelly, H. W. Thomson, G. B. Mason, Temp. Lieut.-Col. W. Hind, Majors (Temp. Lieut.-Cols.) J. Grav, C. Stonham (deceased), Major (acting Lieut.-Col.) E. T. Turner, Major and Bt. Lieut.-Col. A. B. Harris, Majors A. C. Oldham, J. Callan, H. Dodgson, W. A. Taylor, A. J. Naylor, A. Thomas, W. J. MacKinnon, W. E. N. Smilhard, Capt. H. C. Okill, A. H. Hartshorn, and J. Wallace, (T.F.R.) (attached Dtd Welsh Field Ambulance).

BOOKS, ETC., RECEIVED.

CONSTABLE AND CO., London.

The Great War Brings it Home: the Natural Reconstruction of an Unnatural Existence. By J. Hargrave. 10s. 6d.

CLARIDGE AND CO., G. Bombay.

A Primer of Tropical Hygiene. By Colonel R. J. Blackham, C.M.G., A.M.S. 5th ed.

DENT, J. M., London and Toronto.

The Voice Beautiful in Speech and Sound. By E. G. White. 5s.

FROWDE, HENRY, AND HODDER & STROUGHTON, London.

A Medical Service Handbook. By C. M. Page, F.R.C.S. With Foreword by Major-General Sir G. McKins. 6s.

Surgical Aspects of Typhoid and Paratyphoid Fevers. By A. E. Webb-Johnson, M.B. With Foreword by Lieutenant-General T. H. Gooch, Director-General, A.M.S. 10s. 6d.

HARRISON AND SONS, London.

Memorandum on the Industrial Situation after the War: the Garton Foundation. Revised and enlarged edition. 2s.

Communications, Letters, &c., to the Editor have been received from—

A.—Capt. J. H. Aitken, R.A.M.C.;

Answers, Lond., Editor of; Mr.

R. J. Albery, Lond.

B.—Dr. J. Blomfield, Lond.; Mr.

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Dr. F. G. Bell, Edinburgh; Miss

Bligh, Lond.; Mr. T. W. Bassett,

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Bates, Bournemouth; Dr. F. G.

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and Fisheries, Lond.;

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Capt. S. W. Joffin, R.A.M.C.;

Capt. W. G. H. Cable, R.A.M.C.

(S.R.); Major E. M. Corner,

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Lieut.-Col. C. B. Harrison, I.M.S.;

Major C. A. F. Hington, I.M.S.;

Madras; Harvelan Society of

London.

I.—Imperial War Museum, Lond.

J.—Journal of Nervous and Mental

Disease, New York, Managing

Editor of.

K.—Mr. W. P. Kelly, Arklow;

King Edward's Hospital Fund

for London, Hon. Secs. of.

L.—Dr. R. B. Low, Lond.; London

Temperance Hospital, President

of; Major N. O. Lake, R.A.M.C.;

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on-Sea.

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Dr. G. H. Rutter, Bournemouth;

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H. C. Ross, Lond.; Royal Society

of Arts, Lond.; Royal Society,

Lond.

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A. G. Shera, Netley; Dr. M. H.

Smith, Portland; Sanator (Man-

chester).

T.—Maj.-Gen. Sir Alex. Tulloch,

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Capt. A. A. Wilson, R.A.M.C.;

Dr. S. A. K. Wilson, Lond.; Capt.

S. Wickenden, R.A.M.C.(S.R.)

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.O. 2.

Appointments.

ABRAHAM, R. O., M.B. Durh., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Wolston District of the County of Warwick.
 GUNN, A. A., M.B. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Blackburn (North) District of the County of Lancashire.
 WATERHOUSE, R., M.D. Lond., Physician to the Royal United Hospital, Bath.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen City Mother and Child Welfare.—M.O. £500.
 Bath Royal Mineral Water Hospital.—Res. M.O. £250.
 Bedford County Hospital.—H.S. £175.
 Birkenhead Union Infirmary and Institution, Tranmere.—Med. Supt. £600.
 Birmingham General Dispensary.—Res. M.O. £360.
 Birmingham University Faculty of Medicine.—Asst. Prof. of Anatomy. £200.
 Blackburn and East Lancashire Royal Infirmary.—H.S. £250.
 Bodmin, Cornwall County Asylum.—Jun. Asst. M.O. £300.
 Bradford City.—Ven. Dis. O.
 Brecon and Radnor Asylum, Talgarth, Breconshire.—Temp. Asst. M.O. £7 7s. per week.
 Burnley County Borough.—Asst. M.O. £550.
 Chester City and County.—Asst. M.O.H. £400.
 City of London Hospital for Diseases of the Chest, Victoria Park, E.—S. Also M.O. £200.
 Coventry and Warwickshire Hospital, Coventry.—Res. H.P. £250.
 Derbyshire Hospital for Sick Children.—Female Res. M.O. £150.
 East African Medical Appointments.—M.O. £400-£20-£500.
 East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. Phys. Also M.O. for Electrical Department.
 Elizabeth Garrett Anderson Hospital, Euston-road.—Female H.P., also Obstet. Asst. £50.
 Essex County Mental Hospital, Brentwood.—Asst. M.O. £210.
 Federated Malay States Government.—Seven M.O.s. Grade II., and Three remain M.O. £350.
 Fiji Medical Appointments.—Five M.O. £300.
 Gloucester County Borough.—Asst. School M.O. and Asst. M.O.H. £400.
 Greenock Corporation.—M.O.H. £700.
 Guildford, Royal Surrey County Hospital.—H.S.
 Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £50. Also Cas. M.O. £200.
 Keshley Borough Education Committee.—Female Asst. M.O. £300.
 Lincoln Mental Hospital, The Larn, Lincoln.—Asst. M.O. £250.
 Liverpool, Royal Southern Hospital.—Res. P. and S. Also Non-Res. Cas. O.
 Lord's Lock Hospital and Rescue Home, Harrow-road, W., and 91, Dean-street, W.—Hon. Surg. to Out-patients.
 Manchester, Ancoats Hospital.—Jun. Res. £50. Also M.O. £25.
 Manchester Corporation.—Asst. Tuberc. O. £150.
 Manchester Royal Infirmary (Central Branch), Roby-street.—Res. S.O. £200.
 Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £100.
 Middlesex Education Committee.—Sch. Dent. £300.
 Newcastle-on-Tyne Dispensary.—Res. M.O. £300.
 Newcastle-upon-Tyne, Royal Victoria Infirmary and the University of Durham College of Medicine.—Asst. to Prof. of Path.
 Newcastle-on-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £300 to £400.
 Northamptonshire County Council.—Female M.O. £400.
 Northampton General Hospital.—H.S. £200.
 Northern Hospital Sanatorium, Winchester Hill, N.—Two Temp. Asst. M.O. Seven guineas per week and £3 7s. per week.
 Portsmouth County Borough.—Asst. Tuberc. O. £400.
 Preston, County Asylum, Whittingham.—L.T. 7 gs. per week.
 Prince of Wales's General Hospital, Tottenham, London, N.—Hon. Asst. P. in Out-patients' Dept. Also Sen. H.P. and Sen. H.S. £200. Also Jun. H.P. and Jun. H.S. £120.
 Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—S.
 Queen Mary's Hospital for the East End, Stratford, London, E.—Honorary Gynaecologist and Obstetrician.
 Rhondda Urban District Council.—Asst. School M.O. and M.O.H. £400. Also Dent. S. £350.
 Royal Free Hospital, Marlborough Maternity Section, Gray's Inn-road, W.C.—Female Res. M.O. £150.
 Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Honorary Gynaecologist to Out-patients.
 Scarborough Hospital and Dispensary.—Two H.S.
 Shanghai Municipal Council Health Department.—Asst. Health Officer. £90.
 Sheffield Royal Hospital.—Cas. O. £130.
 Sheffield Royal Infirmary.—Res. S.O. £200.
 Southampton Free Eye Hospital.—H.S. £150.
 Stafford Staffs County Mental Hospital.—Sec. Asst. M.O. £300.
 Strath Settlements Government.—Six M.O. £350.
 Swansea General and Eye Hospital.—Res. H.P. £200. Also Sen. Student £120.
 Wakefield, West Riding Asylum.—L.T. 7 guineas per week.
 Wallasey County Borough.—Tuberc. O. and Asst. M.O.H. £500.
 Warford, Alderley Edge, David Lewis Epileptic Colony.—Med. Asst. Director. £400.
 Welthet Government.—Jun. M.O. £400.
 West Riding of the County of York.—District Tuberc. O. £500.
 Wigan Infirmary.—Jun. H.S. £225.
 Wolverhampton and Staffordshire General Hospital.—Two H.S. £200.
 The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Poole and Skagness.

Births, Marriages, and Deaths.

BIRTHS.

FORSYTH.—On March 14th, at Coates-crescent, Edinburgh, Maile, the wife of Lieutenant-Colonel W. H. Forsyth, D.S.O., R.A.M.C.O., of a daughter.
 HITCHCOCK.—On March 13th, at Avonmore, Netley, the wife of Captain C. G. Hitchcock, R.A.M.C.O., of a son.

MARRIAGES.

SOLTAU-WRIGHT.—On March 13th, at St. Mary's Church, Stafford, Captain H. K. V. Soltau, R.A.M.C.O., to Nora Hamacar, youngest daughter of Mr. Charles H. Wright, of Millington Hall, Stafford.

DEATHS.

ALEXANDER.—On March 9th, suddenly, William Alexander, M.D., F.R.C.S., of Holesome, Heswall, Cheshire, and Rodney-street, Liverpool.
 GALLOWAY.—At 16, Saltwell View, Gateshead-on-Tyne, on March 15th, Walter Galloway, L.R.C.P. & S. Edin., late of Wrexham and Low Fell, County Durham. Cremated at Darlington, March 20th.
 N.B.—A fee of 6s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
 THURSDAY, March 27th.—Papers:—Dr. R. McCarrison: The Genesis of (Edema in Beri beri (communicated by Prof. J. G. Adams).—Mr. H. L. Hawkins: The Morphology and Evolution of the Ambulacrum in the Echinidea (communicated by Dr. H. Woodward).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W. 1.

Wednesday, March 26th.

SOCIAL EVENING: at 8.30 P.M.
 Mr. Walter G. Spencer: On Larrey and War Surgery.

MEETINGS OF SECTIONS.

Monday, March 24th.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, G. Paton Pollitt, J. Howard Mummery): at 8 P.M.

Paper:

Captain Kelsey Fry: The Prosthetic After-treatment of War Injuries of the Maxilla.

Casual Communication:

Mr. F. N. Doubleday: A Case of Extensive Loss of the Mandible treated by the Colyer Method.

Friday, March 28th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—G. H. C. Pritchard, H. C. Cameron, C. P. Lapage): at 4.30 P.M.

Abdominal Cases will be shown.

Members wishing to exhibit cases are asked to give notice to the Senior Hon. Secretary, Dr. G. H. C. Pritchard, 35, Harley-street, W. 1.

OPHTHALMOLOGY (Hon. Secretaries—Lealie Paton, Malcolm Hepburn): at 8 P.M.

Papers:

Captain Maxted: Malignant Tumour of the Pituitary Body.

Mr. J. Herbert Fisher: Migraine.

Captain M. M. Maton, R.A.M.C.O.: Stereoscopic Vision.

Cases:

Mr. Elmore Brewerton: Angioid Streaks in the Retina.

Miss Rosa Ford: (1) Congenital Pigmentation of the Cornes; (2) Pituitary Tumour.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W. 1.

TUBERCULOSIS SOCIETY, at the Royal Society of Medicine, 1, Wimpole-street, W.

MONDAY, March 24th.—8.30 P.M., Discussion on Tuberculosis Officers and Panel Practitioners (opened by Dr. H. Sutherland).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY, March 25th, AND THURSDAY.—5 P.M., Goulstonian

Lectures:—Dr. W. W. C. Topley: The Spread of Bacterial

Infection.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Special Eight Weeks Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

LONDON HOSPITAL MEDICAL COLLEGE.

A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—

MONDAY, March 24th.—1 P.M., Lecture IX:—Gastric Ulcer;

Complications, Treatment.

FRIDAY.—1 P.M., Lecture X:—Surgical Anatomy of the Duodenum and Pancreas. (In the Dissecting Room.)

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.

A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).

WEDNESDAY, March 26th, AND FRIDAY.—5 P.M., Lectures VII. and

VIII:—Dr. L. S. Dudgeon: Bacillary and Amebic Dysentery.

Notes, Short Comments, and Answers to Correspondents.

RAFFAELE PAOLUCCI.

ON Nov. 1st the Austrian Dreadnought Flagship, *Viribus Unitis*, was sunk in the harbour of Pola by two young Italian officers, Raffaele Rossetti and Raffaele Paolucci. The idea of so destroying this ship, which in the days of Caporetto had sent out wireless messages insulting to Italy, occurred to these officers independently. Rossetti was a naval engineer, but the *Annali di Medicina Navale* for September-October, appearing a little late, takes great pleasure in emphasising that Raffaele Paolucci was a lieutenant in the Naval Medical Department. He had served at the beginning of the war, being unqualified, as sergeant of a sanitary section, where he distinguished himself in a cholera epidemic, and later, having qualified, was sent to a Regiment of Bersaglieri, where again he came to notice for attention to the wounded under fire, then four months later he joined the Navy. The two officers simultaneously submitted proposals for entering Pola harbour; authority, approving their schemes, brought them together; they worked with enthusiasm, and themselves were the only crew of the boat which secured the triumph. The decree of the King of Italy promoting them is in almost identical terms to each, so similar were their ideas and achievements. The medical officers of the Italian Navy may well be proud of the skill and daring of their young brother officer.

COLONIAL HEALTH REPORTS.

St. Vincent.—A report on the Blue-book of this colony for 1917-18, written by Mr. Anthony de Freitas, acting administrator, has been received at the Colonial Office and presented to Parliament. It gives the present estimated population as 50,669. The birth-rate for the year was 36.64 per 1000 of the estimated population and the death-rate 20.99 per 1000. Illegitimate births numbered 1224, or 65.91 per cent. of the total number of all births. During 1917-18 there were 1055 admissions to the colonial hospital and 168 operations were performed. The death-rate was 6.3 per cent. of the cases treated. The casualty hospital at Georgetown, with four beds, continued to fulfil its purpose of providing the means of treating emergency cases; 23 cases were dealt with. At the yaws hospital 99 cases were treated, and 57 of these were discharged cured. At the usual district dispensaries and at special travelling dispensaries 1178 other yaws patients were treated during the year. During the last two years a campaign against yaws has been maintained at these dispensaries with the following results: cases treated, 2308; cured, 1152; still under treatment, 619. In the leper asylum eight patients were maintained; none died. The campaign undertaken by the Rockefeller International Health Board for the eradication of the ankylostomiasis or hookworm disease was carried on by Dr. P. B. Gardner for nine months in 1917. Of 6295 persons examined in that period, 4118 were found to be infected with hookworm; the number treated was 4453, of whom 4159 were cured. In connexion with the campaign measures for faecal sanitation under the public health regulations were carried out for preventing soil pollution, so as to avoid re-infection and new infection. New latrines to the number of 414 were erected at homes located within the area in which the campaign was conducted during the nine months. The rainfall for the year was 92.96 inches, and the mean monthly temperature 79° F.

A CRETAN LIBRARY.

Manuscript No. 3574 B of the Hebrew collection in the University of Bologna contains several medical treatises, all but one of which are translations from the Arabic, made in the fourteenth and fifteenth centuries. One bears the translation date of 1306. In addition to these there is a catalogue of the medical books in the library of Levi Novico, a medical man of a well-known Cretan family who resided at Candia early in the sixteenth century.

This list is of importance for the history of medical literature, because it discloses what works upon the science were obtainable by an ordinary well-to-do practitioner (for the Novico family were highly respected at Crete) and thought to be worthy of study and also of being translated from the Arabic in the later Middle Ages. The Hebrew titles in the catalogue cannot be given here, neither is it necessary to specify works enumerated which are not now extant or of whose contents we are ignorant, but a summary is made of those of which we still possess versions either in Hebrew or the original language in which they were composed. The first of Levi's medical books is stated to be by R. Vidal, which is merely a pseudonym for Moses of Narbonne. A copy of it is to be found, bearing the same title, in a Munich manuscript, according to Steinschneider's

Catalogue of Hebrew Codices there. An interesting text was that of the "Aphorisms" of Hippocrates with the commentary of Moses Maimonides. The compiler of the catalogue notes that its Hebrew translator was Moses ibn Tibbon, and he executed the work about A.D. 1260. A copy of this is at the Bodleian Library, Oxford, and is No. 1319 of Dr. Neubauer's catalogue. Another book was a treatise upon fevers and the urine by a certain Isaac ha-Israeli. Another book enumerated was entitled "Mansourian Medicine." This is the work which Mohammed ben-Zakharīya al-Rhazī dedicated to Abu-Dja'fir-El-Mansouri, an Abbasid Caliph. There is a copy in the Bodleian, No. 2030. Levi Novico's translation of it was by Rabbi Sohem Tob, and a recension of this is in the Vatican Library.

The next medical work in the list of which we know something was a commentary upon Galen's *Tékryn*, by Isaac ben Hosein, or Honein. This was rendered into Hebrew by Moses ibn Tibbon. Apparently it was identical with a treatise in a manuscript at Ferrara, which Rabbi Jare calls "Compendio di Honein ibi Isaac di quanto trattasi nel commento de Galeno sulla opera d'Ippocrate intorno alle malattie acute." There is an Oxford manuscript of it, No. 2088. Levi also had secured a copy of Gerard of Cremona's Latin edition of Avicenna's "Canon," published at Venice in 1556 under the title of "Tabulae isagogicae in universam medicinam ex Arte Humani id est Joannis Arabici." Another work of which a copy is at Oxford, Bodleian 2111, and another at Munich was called "Vaticum perigrinantis" by Ibn al Djeza. The Hebrew version Levi had was by Moses ibn Tibbon. Another book was a treatise upon Simples by a Spanish Arab, Omniah Abd el Aziz Andaluzzi. According to Herbelot he knew of an Arabic text of this. Among works of which we are ignorant, a well-known one occurs, the "Lilium Medicinæ" of Master Bernard Gordon. Hebrew versions of this are extant. Avicenna is also represented by a translation of his "Medicamenta Cordialia." This may be identical with the Hebrew version of this work now in the Leiden library. The Bodleian possesses a commentary upon it, No. 2109.2. More interesting must have been Levi's Manuscript No. 4, for it contained Avicenna's treatise on levers, being the fourth book of that author's "Canon" and with it was included the explanation of Averoes. The translator into Hebrew was Solomon ben Abraham ibn Daod, and a copy is in Neubauer's Bodleian Catalogue, No. 2112. Next may be noticed a work which is extant in various versions, by the elder Serapion of Damascus. It is a well-known book, because of paraphrases of it having been published by Albanus of Turin and Gerard of Cremona, who called it "Practica" and "Breviarum." The Bodleian No. 7182 has a Hebrew version of it by Rabbi Moses of Capua. In conclusion should be noticed a Hebrew work entitled "Observations upon Bodily Afflictions." This was probably a treatise upon diagnosis.

OSTEO-ARTHRITIS.

To the Editor of THE LANCET.

SIR,—In answer to an inquiry under the above heading in your issue of March 15th, a patient who had been treated ineffectually for a pain in his hip for two years had his morning urine acidulated with 10 per cent. of strong hydrochloric acid, and after a few hours a great excess of uric acid was precipitated. Four tablets of phenoin (phenylcinchoninic acid) had been taken overnight. The treatment was continued for 14 days, when the pain had completely disappeared and the urine, being examined, was found free from excess of uric acid. The same good results have followed other similar instances and in cases of neuritis, migraine, iritis, conjunctivitis, eczema, &c., some of very long standing. But in typical cases of osteo-arthritis there is no relief and no deposit.

I am, Sir, yours faithfully,

London, S.W., March 15th, 1919.

DUNCAN DUNCAN.

LIFE AND HEALTH IN THE HIGHLANDS.

UNDER this title Dr. Lachlan Grant has contributed to the *Caledonian Medical Journal* an article, now reprinted, which shows that the growth of new ideas and the revivifying of old ideas, which have taken place during the war on all hands, have affected the Highlands of Scotland in a marked way. In an economical sense the Highlands and Islands are only now being discovered, says Dr. Grant, who indicates their latent possibilities of production in agriculture, quarrying, fisheries, forestry, and manufacturing and cottage industries. The housing problem is, of course, as acute in this part of Scotland as in other parts of the country and the United Kingdom, and considerations of public health, social amenities, justice to mothers, and welfare of children make it imperative, he thinks, to launch an elastic comprehensive scheme and to carry this out as soon as labour and materials are available. With regard to the Highlands and Islands Medical Service, for the improvement of which Dr. Grant has always been a front-rank advocate, he appeals for a more generous scheme.

A Lecture

ON THE

LESSONS OF THE WAR AND ON SOME NEW PROSPECTS IN THE FIELD OF THERAPEUTIC IMMUNISATION.

Delivered at the Royal Society of Medicine, Feb. 25th, 1919.

BY SIR ALMROTH E. WRIGHT, K.B.E.,
C.B., M.D., F.R.S.

(Embodying Research Work done in conjunction with
Dr. LEONARD COLEBROOK.)

GENTLEMEN,—The war has taught two great lessons in immunisation. It has taught the surgeon that if he provides the requisite conditions—and he does provide them when he excises all devitalised and heavily infected tissues and brings together the walls of the wound—the protective mechanism of the body can, without any antiseptics, deal successfully with every kind of infection. I say advisedly every kind of infection. For the experiments with leucocytes—which I shall presently show you—and experience with retarded suture (where we can count on emigration into the wound) have conclusively shown that leucocytes can kill, and that one can successfully close upon streptococcal infections.

The second great lesson of the war has been learned in connexion with antityphoid inoculation. The signal success of that procedure has made it manifest to everybody that the natural powers of resistance of the human body can be powerfully reinforced by inoculation.

I propose here to take as my text those two teachings of experience; and I shall try to show you that when we have arrived at a proper comprehension of these, we shall have realised the principles upon which therapeutic immunisation, and practically all treatment of bacterial disease, must proceed.

FIRST PRINCIPLES.

Let me start quite at the beginning. Long after the principle of prophylactic inoculation had established itself in medicine, it was accepted that to inoculate microbes into the already infected system would be as illogical as to instil further poison into an already poisoned system. Pasteur was the first to teach us here a distinction. He pointed out, in connexion with immunisation against rabies, that a vaccine might legitimately come into application in the incubation period. That was the beginning of therapeutic immunisation; and from that time forth it was recognised that you may legitimately inoculate in the incubation stage, and try to get in advance of the infection. But it was in everybody's mind that immunisation took 10 days to establish itself. When I showed in connexion with antityphoid inoculation that bactericidal substances were very rapidly elaborated, it became plain that this involved shifting the old landmarks and taking in further territory for therapeutic immunisation, and one had to ask oneself all sorts of penetrating questions. One had to ask oneself in connexion with "generalised infections" at what particular stage of the infection one was to regard the body as overmastered by the bacterial poison, and incapable of further immunising response. Again, in connexion with "localised infections" one had to inquire whether they should not be envisaged as general infections indefinitely arrested in their incubation stage, and whether they might not, in consonance with that, be brought within the sphere of inoculation.

Further consideration suggested that the problem of therapeutic inoculation can be approached also from a point of view different from that taken up by Pasteur. With respect to immunising response, the body had been visualised as a single and undivided unit. That is clearly erroneous. One region of the body may be making immunising response while the other is inactive. For instance, in the stage of incubation it is presumably only the region which is actually harbouring the microbe, and in the stage of generalised infection it is presumably the entire body which is incited

to respond. And again, in localised infections we may—making here some reserves—assume that we have only localised response.

Placing ourselves at this point of outlook, therapeutic immunisation will, it is clear, be theoretically admissible so long as there remains in the body any part which is not already making its maximum immunising response. And the programme of therapeutic inoculation would accordingly consist in exploiting in the interest of the infected regions of the body the immunising responses of the regions which are uninfected.

RESULTS OF VACCINE THERAPY.

Keeping that now in view, let me try, very briefly, to tell you what are, in my view, the results which have been achieved by applying this therapeutic method. I can do that in a very few words.

In every form of infection a certain quota of unequivocal successes may be credited to the method, and especially successful results have been obtained in furunculosis and acute inflammatory sycosis; in "poisoned wounds"—meaning by that localised cellulitis set up by a streptococcus infection; in streptococcal infections taking the form of lymphangitis, in erysipelas; in tubercular adenitis, tubercular joint infections, tubercular dactylitis, tubercular orchitis, and tubercular affections of the eye, especially in phlyctenules of the conjunctiva; again in bronchitis, in colicystitis, and gonorrhoeal rheumatism. The most dramatic and convincing—convincing because here no other therapeutic measure are employed as adjuncts—are the successes obtained in streptococcal lymphangitis, in streptococcal cellulitis—I am thinking of those cases which have already been incised without striking benefit—and in conjunctival phlyctenules.

When we analyse the successes and failures¹ of vaccine therapy the following points come out quite clearly:—

(1) Vaccine therapy is generally unsuccessful where the infection—as in phthisis—is producing constitutional disturbance and recurring pyrexia.

(2) Vaccine therapy is also generally unsuccessful where we have to deal with unopened abscesses, or sloughing wounds with corrupt discharges.

(3) In long-standing infections vaccine therapy is much less successful than in recent infections.

To see what auxiliary measures should be applied in these cases, I must take you back for a moment to the region of general principles. And here I want you to allow me the use of some new technical terms.

A FEW WORDS ON TECHNICAL TERMS.

May I preface the bringing forward of these by a few words of disputation. I am not unaware that the natural man has an acute disrelish for new technical terms. He feels at the mere suggestion of them the same sort of ennui as when asked to learn a string of surnames before he

¹ I here, as clear thinking exacts, exclude from the failures of vaccine therapy the failures of that preventive inoculation against individual infections to which vaccine therapy is the usual precursor. The efficacy of such prophylactic procedure is a question apart. But I may usefully point out to you that the superior credit which attaches to antityphoid inoculation, and preventive inoculation against infective diseases generally, as compared with preventive inoculation against what I may call *individual infections*, is probably attributable to the fact that, in the case where we are dealing with an infective disease, the external circumstances are as favourable to success as they are in the case of inoculation against "*individual infections*" unfavourable.

Let us reflect that in the case of inoculation against an infective disease it is not usually a requirement that the patient should come into his immunity immediately or that a negative phase should be avoided. That will be essential only when inoculation is undertaken in the actual presence of infection. On the other hand, in inoculation against an "*individual infection*," since here the pathogenic microbe is always knocking at the door, the avoidance of a negative phase and immediate immunisation are always indispensable and every failure will straightway notify itself. Again, in preventive inoculation against infective disease we administer inoculations to all and sundry—to the susceptible and the uns-susceptible. In preventive immunisation against individual infections we apply inoculation only to the susceptible. For example, preventive inoculation against furunculosis is applied only to the susceptible—to those who have suffered from boils. Lastly, where we inoculate a community against an epidemic disease *pari passu* with the number of men successfully inoculated, the chances of infection are for the others reduced. In other words, the successfully inoculated give protection to the unsuccessfully inoculated; and we obtain the benefits of what I have, in contrast with a *circulus vitiosus*, called a *circulus felix*. Nothing of that kind comes to our aid in immunisation against an individual infection—for here we inoculate the patient against a microbe which he constantly bears about with him.

has any interest in the persons who bear them. But let me ask you to look also on the other side, and to reflect how unsatisfactory an experience it is to have had intellectual traffick with an interesting man and to have been left in ignorance of his name. We then experience a definite want; we want a labelled pigeon-hole in our minds into which to put away for safe keeping our new mental record, and we are conscious that we shall have difficulty in remembering and turning up that record unless we have it properly registered under a name. I would further have you reflect that if any one of us were this moment invited to give an account of the people we had met in the course of the day we should find that we remembered practically only those few who happened to be known to us by name. Now, with ideas it is exactly the same as with men: only those which have been fitted out with names occupy any place in our thoughts. All unnamed concepts, even though they may have formulated themselves quite clearly in our minds, immediately go out of our thoughts and get lost. So for every new concept that has a utility there must be devised a technical name. Especially will that name be required for introducing the concept to others. The new technical term is the missionary of the idea.

One more point I want you to consider. Technical terms are distasteful not only because they are unfamiliar, but because they are foreign and difficult. We should, however, bear it in mind that the store of short and simple and native words has long since been exhausted, and very nearly every Latin word has already been incorporated into our language, and also nearly all the simpler Greek words have been taken into service. So there remain over only the longer composite Greek words—the terms that are so distasteful. But if we refuse to accept these, it will become impossible to put into currency any new ideas. When you want to specify a particular man or concept you cannot get on without the use of a label. For, in default of a label, you have every time to resort to a full specification.

Let me now return to my exposition asking you to let me, in connexion with it, introduce to you the new technical terms which I have prepared for you—hoping that they will be helpful.

THE DEFENSIVE MECHANISM OF THE BODY.

To combat bacterial infection the organism must have defensive powers. That power of guarding itself against infection we may—the suggestion is Lord Moulton's—call *phylactic power*. The leucocytes and the bacteriotropic substances in the blood fluids we may call phylactic agents. But phylactic power in the blood will not be all that is required. Military similes become stale; but let me here just indicate that the requirements for the defence of a State are not limited to the possession of a standing army. There is required also efficient staff work to bring your defensive force to the point attacked. The self-same thing applies to the body. You must have not only phylactic power in the blood, but also provision for the transport of your leucocytes and bacteriotropic blood fluids to the site of infection. Let me call this transport of phylactic agents to the site of infection *kata-phylaxis*.² (You have a similar use of the prefix *kata* in catapasm and kataphoresis); and let me term any condition which interferes with that transport an *anti-kata-phylactic influence*.

Now in the body, when in sound physiological condition, we have efficient kataphylactic arrangements—blood fluids and leucocytes have unrestricted access to every portion of the body. But when anti-kataphylactic influences are brought to bear; when the arterial supply is interrupted, or is closed down by collapse, or the body is petrified by cold, and the alkalinity of the lymph is blunted off by acid metabolites derived from the muscles: then the emigration of leucocytes is arrested, and the transport of blood fluids into the tissues comes to a standstill. And with that all pathogenetic microbes which may find entrance—even microbes like gas-gangrene bacilli which grow with immense difficulty in the healthy blood fluids—flourish unopposed.

² While this paper was under revision for the press I discovered that the term "kataphylaxis" had already been employed by Bullock and Cramer in a paper which had already appeared in the form of an abstract. With a graceful courtesy, for which I am very grateful, these authors are now replacing the term *kataphylactic* in their paper by the term *aphylactic*, thus generously ceding to me their rights of prior user, and leaving the field free for the employment of the former term with the signification which is here assigned to it.

Phylaxis and *kata-phylaxis*—these are the normal defences of the body. But there are also resources in reserve. By a process comparable to a mobilisation for the reinforcement of a standing army, the phylactic powers of the blood fluids can be increased. We may call that *epi-phylactic reinforcement*, or *epi-phylactic response*. Such epiphylactic response manifests itself, as you know, in connexion with, we may say, all infections that give rise to constitutional disturbance. And such response follows, as you know also, upon bacterial inoculations when conducted with appropriate doses. But, as I pointed³ out already in connexion with one of my first batches of experimental antityphoid inoculations, there follows directly upon the inoculation of a large dose always a phase of diminished blood resistance—I called it a *negative phase*. It would be more conformable to the system of terminology I am advocating to employ here the term *apo-phylactic phase*.

Ec-phylaxis.

We now come to something which is much less familiar—less familiar, but, I think, even more important.

I have in view here conditions which I drew attention to 20 years ago⁴ in connexion with typhoid and Malta fevers, coining for my propagandist purposes the terms "regions of diminished bacteriotropic pressure," "non-bacteriotropic niduses," and "non-bacteriotropic envelopes." These terms may perhaps have been unsuccessfully coined; they have, at any rate, not proved effective missionaries of the idea, and I would propose now to try to put into currency instead the terms *ec-phylaxis*, *ec-phylactic region*, and *ec-phylactic envelope*. When I speak of an *ec-phylactic region* you will understand me to mean a region in which the guardian elements of the blood have been rendered impotent or, as the case may be, have been excluded. A moment ago, in describing the effects produced by the abolition or suspension of the circulation by injury to the blood-vessels or exposure to cold, I was picturing to you an *ec-phylactic region*. Much more commonly—and these, of course, are the conditions I described in typhoid and Malta fever—the *ec-phylactic region* has been fabricated by a bacterial colony. You will appreciate that every living bacterial colony must become the centre of an *ec-phylactic sphere*. It will become so (a) by radiating out toxins which will (when of sufficient strength) repel leucocytes; (b) by absorbing bacteriotropic substances from the blood fluids; and, probably (c), by abstracting anti-tryptic power from the blood fluids and so converting these into a congenial culture medium.

Types of Ec-phylactic Foci.

In the diagrams I here show you, I have depicted three different types of *ec-phylactic foci*. In Diagram 1—reproduced here as Fig. 1—we are dealing with serum implanted with gas-gangrene bacilli in moderate numbers. On looking at Tube A, where by occasional shaking the microbes have been kept dispersed, you will see no indications of a change in the medium, or growth. In the companion tube, B, where the microbes were carried down and compacted by centrifugalisation, the chemical action of the microbes has at the bottom of the tube produced the *ec-phylactic region*, which is indicated upon the figure by lighter shading. In this region, by the diminution of its anti-tryptic power and a blunting off of its alkalinity, the serum has been converted into a congenial culture medium for the gas-gangrene bacilli, and if incubation had been continued longer we should have had after this preparatory process massive growth with gas-formation.

Tubes C and D represent another pair of companion tubes that have been kept longer in the incubator. In Tube D, where to prevent conglomeration of the microbes the test-tube has, as suggested by Dr. Fleming, been blown out into a bulb; there are, as you see, no indications of growth. In C, owing to the circumstance that the microbes could here collect together by gravitation, opportunity was afforded for the development of an *ec-phylactic focus*; and here as an after result we have a massive culture with abundant production of gas.

Diagram 2 (which reproduces figures already published⁵) shows the second type of *ec-phylactic focus*—that produced by negative chemotaxis. You have represented what

³ THE LANCET, Sept. 14th, 1901.

⁴ THE LANCET, Dec. 23rd, 1899, and Wright: *Studies on Immunisation*. Constable, London.

⁵ THE LANCET, Jan. 26th, 1918, Fig. 1.

happens when we take (a) a clean surface, (b) a surface thinly coated with microbes, and (c) a surface thickly coated with microbes; impose on each a drop of blood; and then incubate in a moist chamber. Upon the *first* surface we get, as you see, a moderate emigration of leucocytes; upon the *second* an augmented emigration; and upon the *third*—and it is to this that I want to direct your attention—absolutely no emigration. In other words, here by condensing the bacterial infection there has been fabricated an ec-phylactic region.

In the next diagram (not reproduced here) we have the third type of ec-phylactic focus—that produced by exudation of fluid. Where that occurs the leucocytes are—so far as any phagocytic activity is concerned—put out of office, and the infecting microbes are—so far as phagocytic attack is concerned—safe. That is the justification of the surgeon's solicitude about infections in artificial or natural "dead

more active) on an improved footing. It is as if we had started with a well-equipped standing army, had reinforced it by mobilisation, and had maintained or improved the organisation for the transport of a military force to any point of attack. With all this, we should, be in a position to repel assault. And similarly, it should be possible to make a success of preventive inoculation.

In the nature of things therapeutic inoculation should be infinitely more precarious. The important point to grasp is that should epi-phylactic response or kata-phylactic reaction or either of these make default, therapeutic inoculation is almost bound to miscarry. You will remember my telling you in connexion with the results of vaccine-therapy that cases of continuous or frequently recurring pyrexia, and cases of unopened abscess, were intractable. You now appreciate that in the first class of cases the epi-phylactic, and in the second class of cases the kata-phylactic, reaction makes default.

CAUSES OF FAILURE IN VACCINE THERAPY.

Let me say a word or two about each kind of failure.

Epi-phylactic response will be interfered with when the patient is suffering from continuous or frequently recurring conveyance of bacterial toxins into the blood. So long as the patient is thus tormented by auto-inoculations, we can effect nothing by vaccine therapy.

In such a case the proper remedial measure is to abolish the auto-inoculations. The best procedure is to incise and evacuate the contents of the focus of infection. Where this is inapplicable we must have recourse to immobilisation. In the case of a limited local infection, local immobilisation will suffice; where the focus is of large dimensions, rest in bed will be indicated; and in the case of a more extensive infection, the programme of "absolute rest," as laid down by Dr. Marcus Paterson, "for pyrexia in phthisis is imperative. You will appreciate, of course, that when we try to abolish the auto-inoculations, what we are trying to do is to obtain a free field for the employment of properly graduated doses of vaccine, or, as the case may be, for properly controlled auto-inoculations.

Vaccine-therapy will less frequently make shipwreck through default of epi-phylaxis than through shortcomings in kata-phylaxis. Frustrated kata-phylaxis accounts for almost all failure in the treatment of bacterial disease. The situation we have to deal with is as follows: Microbes can establish themselves in the organism only in two circumstances. First, when they find access to a region rendered ec-phylactic by interference with the circulation or other anti-kata-phylactic agency; and, secondly, when they succeed in fabricating for themselves an ec-phylactic environment. An ec-phylactic area once established, special measures will be required to bring the leucocytes and protective substances of the blood fluids into application.

KATA-PHYLACTIC MEASURES.

Three different types of kata-phylactic measures may be resorted to: (1) The contents of the ec-phylactic focus may be evacuated. Then by the emigration of fresh leucocytes and the transudation of fresh serum physiological conditions will spontaneously establish themselves in the focus of infection. (2) Normal conditions may be restored by augmenting the transudation of lymph into the focus of infection, and displacing and expelling by this agency the ec-phylactic lymph. (3) Physiological conditions may be restored by processes of simple diffusion.

You will want to have before your mind a clear picture of what procedures come under these headings.

1. Procedures for Evacuating the Ec-phylactic Fluid into the Exterior.

(1) *Incision.*—The first among such procedures is incision into the focus of infection. It is clear that incision will evacuate any collection of ec-phylactic fluid; but only rarely will the fluid which flows away comprise the whole of the ec-phylactic fluid. In the case of an abscess we evacuate only the contents of the cavity and only a very small amount of lymph will spontaneously follow. Where tissues are incised only the fluid which is standing under pressure will flow out, and even this may be prematurely arrested by its coagulating upon the walls of the incision. But even under the happiest conditions incision will give us only an

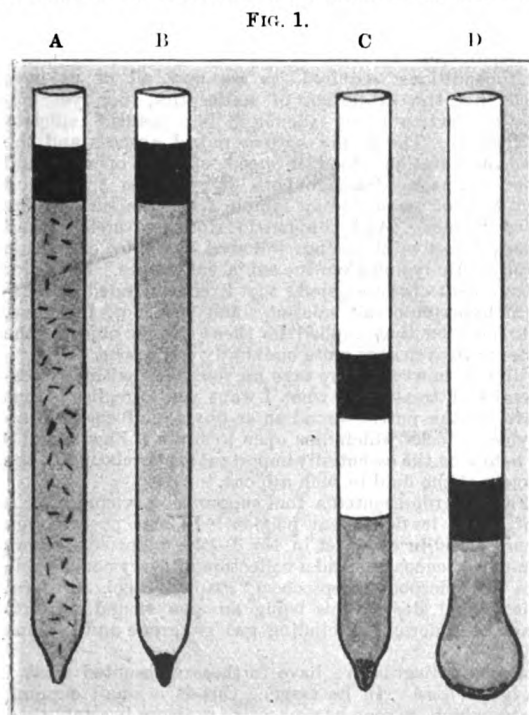


Diagram showing, in connexion with the bacillus of Welch, that the compacting of infection produces, as in B, ec-phylactic changes in the neighbouring serum, and afterwards, as in C, a general infection of the medium with gas formation. In A, where the microbes are kept dispersed by shaking, and in D, where their close aggregation is prevented by the shape of the tube, there are no ec-phylactic changes and no growth.

spaces." You will appreciate that leucocytes, though, of course, they will emigrate into, cannot swim or transport themselves from place to place in, a fluid medium. They can only crawl along surfaces and creep along the trellis work of the tissues.

CONTRAST BETWEEN PREVENTIVE AND THERAPEUTIC INOCULATION.

I have now introduced to you my new technical terms. And I propose now to show you that the concepts which I have designated by the terms *phylaxis*, *kata-phylaxis*, *anti-kata-phylaxis*, *epi-* and *apo-phylaxis*, and *ec-phylaxis* provide us with a key to the understanding of the difficulties which are encountered in vaccine therapy, and, indeed, in all treatment of bacterial disease. Further, I want to try to show you that these concepts teach us how these difficulties may be in many cases surmounted.

Let me begin by drawing your attention to the fundamental contrast between the conditions in preventive and therapeutic inoculation. In preventive inoculation we start from the platform of normal resistance, with normal phylactic power; to that we superadd the reinforcement contributed by the epi-phylactic response; and we can count upon the kata-phylactic arrangements being maintained upon a normal and perhaps (for emigrational response may be

* Auto-inoculation in the Treatment of Phthisis. Nisbet, London.

incomplete draining away of the ec-phylactic fluid. The same holds, of course, of aspiration.

(2) *Incision and cupping*.—This procedure, which was brought forward by Klapp, might at first sight appear to be calculated to draw off all the ec-phylactic lymph from the focus of infection. In actual practice the method fails, when, as in carbuncle, we have to deal with lymph spaces blocked with leucocytes and coagulated exudate. And in any case, in extracting lymph by Klapp's method the same difficulties will confront us as when we employ negative pressure to draw a coagulable fluid through a paper filter. The filter very soon becomes obstructed—and then it is very likely to tear—and we never can get much fluid through.

(3) *Application of hypertonic salt solution to a naked tissue surface*.—We have here instead of a local lymphagogue, which acts by direct mechanical pressure, one which functions by what I may call "diffusion pressure." In other words, we have here an agent into which fluids of lower salt content will be drawn in. By virtue of this power it will suck out ec-phylactic lymph from infected tissues.

(4) *Application of irritant solutions to naked tissue surfaces*.—My fellow-worker, Dr. Alexander Fleming, has shown that an outpouring of lymph—which is very clearly differentiated from that produced by hypertonic salt in the respect that it is delayed instead of immediate—is obtained from a wound also by the application of solutions of the hypochlorites—such as Dakin's fluid. No doubt this lymph outflow is attributable to the hyperæmic reaction produced. A massive transudation—of, I think, similar derivation—supervenes upon the application of concentrated carbolic acid and also of certain other antiseptics to the wound.

2. Procedures for Restoring Normal Conditions by Augmenting Transudation from the Blood and Displacing and Driving Out the Ec-phylactic Fluid from the Focus of Infection.

Under this heading may be enumerated three procedures: the application of hot fomentations, the application of a Bier's bandage, and massage. In the first two we make use of increased transudation—obtaining that increased transudation in the one case by active and in the other by passive congestion. In massage we use mechanical propulsion. It will generally be inapplicable to an active focus of infection.

3. Procedures for Restoring Physiological Conditions in the Focus of Infection by Spontaneous Diffusion of Protective Substances from the Blood.

If we had under Scuriat cross-examination the man who expects benefit indiscriminately from every therapeutic inoculation it would be elicited that he had a confused expectation that the protective substances obtained by inoculation would diffuse into and do effective work in every focus of infection. In the case of a focus which has attained a certain magnitude that cannot by any possibility happen. For the infecting microbes are incessantly obstructing the work of immunisation. They are continuously paralyzing and repelling the leucocytes and depraving the blood fluid to their advantage, and thus they neutralise and more than neutralise the in-streaming protective substances. Added to that, when infection induces effusion, and the effusion gathers bulk, and the infecting microbes transform it, that transudation fluid is less and less affected by diffusion from the surrounding blood-vessels. We have here assuredly the explanation of the fact that we get as good as no success from therapeutic inoculations when dealing with large and unopened foci of infection; that we get much better results when the infective foci have attained only moderate dimensions; that we get very good results when dealing with very small foci; and our very best when, as in prophylactic inoculation, we are dealing with infecting microbes before they have had time to fabricate round themselves any ec-phylactic focus.

Of such dominating importance is efficient kata-phylaxis in the conflict with bacterial disease that I do not hesitate to assert—and these are views with which every surgeon will fall in—that if we were to put our election, on the one hand, between efficient epi-phylaxis without kata-phylaxis; and, on the other hand, efficient kata-phylaxis without epi-phylaxis, we ought every time to choose the latter.

SEPTIC WAR WOUNDS.

Up to the point to which I have now carried you, we had arrived already years before this war, and I had in a succession of papers reprinted in my *Studies in Immunisation*,¹

explained the broad therapeutical principles which I have here been laying before you. But these—it was perhaps for lack of the right words to serve as missionaries of the ideas—had not won for themselves any general recognition when on a sudden, with the outbreak of this war, there was thrust upon the whole medical profession the task of combating bacterial infections in wounds.

You know only too well the situation which confronted us in the early days of the war. Every wound was indescribably septic. We were back again—as Sir Alfred Keogh told me as he sent me out—to the gross septic infections of the Middle Ages. Where the projectile had left only small external openings the wound by the time it arrived at the base had been converted into a putrid unopened abscess. When the projectile had made a large opening tearing away the tissues, the entire surface was covered with foul sloughs. And when amputations had been sewn up at the front, and everything was sealed up tight, the sepsis was even more acute and the conditions more deplorable.

Such conditions required—as we now all of us have learned—not the exhibition of antiseptics, nor yet epi-phylactic treatment by vaccines, but instead efficient kata-phylaxis. The wound with a putrid abscess and the sutured amputation stood in need of free opening and efficient drainage—drainage both of pus from the wound cavity, and of ec-phylactic lymph from the surrounding tissues. And the putrid slough covered wound required digestive cleansing, followed again by extraction of ec-phylactic lymph from the subjacent tissues. It was for the attainment of these objects that I recommended applications of hypertonic salt solution; and it is not, I believe, open to question that applied for these specific objects² the hypertonic treatment is quite eminently efficacious.

I will not, however, here take up your time with discussing details of treatment; what I want you to realise is that we have in the putrid wound an ec-phylactic focus, and an ec-phylactic focus which lies open to study. Figs. 2 and 3 bring before us the essentially important facts relating to the characters of the fluid in such a focus.

In Fig. 2 is represented a foul suppurating wound with a pool of pus in its dependent portion. In this pus—as you see represented in the inset in No. 1—the microscope shows broken-down leucocytes and a collection of every conceivable species of microbe—streptococci, staphylococci, coliform organisms, and, despite this being an open wound, all sorts of anaerobic microbes, including gas gangrene and tetanus bacilli.

In the main diagram we have further represented what I call a *lymph-leech*. In its essence this is a small cupping apparatus which, as soon as a negative pressure is established in its interior, fixes itself tightly to the walls of the wound and then sucks in fluid.

In inset No. 2 we see a sample of the fluid taken from the lymph-leech after it has been left in position over-night. Here, as you see, the leucocytes are sparingly present, but they are in good condition, and in the fluid—though it of course exuded through a wound surface soiled with every kind of microbe—we have, as you see, a pure or practically pure culture of streptococci.

Another type of experiment which is, as you will recognise in a moment, essentially similar to this is represented in Fig. 3. Here we take a corrupted pus from a wound, draw one unit volume into a capillary pipette, and then follow on with a series of unit volumes of normal serum, separating these off by air-bubbles. I call that a sero-culture made by the wash and after-wash method. Of the trail of infected pus left behind upon the walls of the capillary stem the first

¹ I need not here come back upon the fact that strong salt solution draws out lymph from the tissues, nor upon the fact that it liberates the trypsin required for digesting off the sloughs. These points I have, I feel, established (vide THE LANCET, June 23rd, 1917, Sections entitled Drawing Action of, and Setting Free of Trypsin by, Hypertonic Salt-Solution). I may, however, deal here with a supplementary point. It has more than once been objected that the lymph which the hypertonic solution extracts from the walls of the wound must assuredly by virtue of its anti-tryptic power antagonise the trypsin which is liberated from the leucocytes, with the result that the digestion of the slough will be arrested before it has well begun. It has, however, been shown by the observations of my fellow-worker, Dr. Fleming, that the lymph which the hypertonic solution extracts from the walls of the infected wound is a lymph of reduced anti-tryptic power—in other words, a lymph which is incapable of neutralising the action of the trypsin. And clearly, so long as the slough remains in place, and maintains the infection in the underlying tissues, so long at least will the extracted lymph be an ec-phylactic and non-anti-tryptic lymph.

² Constable, London.

unit volume of serum will carry away the greater part, and there is progressively less pus left behind for the after following unit volumes of serum.

When we now incubate our pipette and blow out the volumes one after another; we find, in the most heavily implanted and most corrupted serum volume, conditions essentially similar to those shown in the pus from the putrid open wound; and, in the progressively less heavily implanted and less corrupted serum volumes, conditions identical with those in the exudate taken from the belly of the lymph-leech.

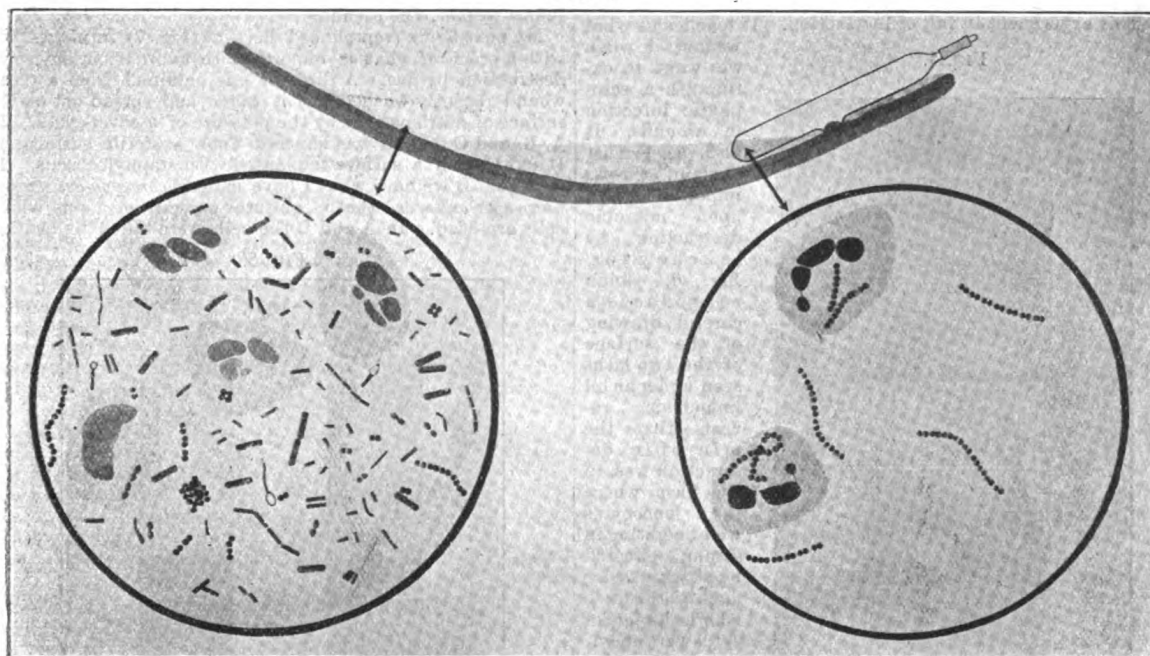
TYPES OF INFECTION.

We have here a fundamental fact relating to microbic infections. Of the infinitely numerous varieties of microbes which exist in nature it would seem that nearly all can grow in the blood fluids when their anti-tryptic power has been sufficiently reduced by an addition of trypsin; and the gas gangrene bacilli in particular can grow not only in the blood fluids which have been, as I call it, "corrupted" by trypsin.

experiment, shown in these diagrams, directly confirms that inference. We have in the first centrifuged defibrinated blood—showing three layers—a layer of serum above, then a layer of leucocytes, and below a stratum containing practically only red corpuscles. In the second (Fig. 4) we have a drop from each of these layers imposed upon an agar surface implanted with a serophytic organism (in this case with staphylococcus). Each drop is then covered in with a cover-glass and the containing Petri dish is then incubated. You see that the microbes have grown freely in the specimens made from the upper and lower layers of the blood, and that the colonies are here quite as numerous as on the rest of the plate. But you see that in the central area of the middle preparation where we have an aggregation of leucocytes every microbe has been killed off.

We can refine upon this, and operate upon microbes with isolated leucocytes—leucocytes which have emigrated from the blood. We proceed as follows: We withdraw some

FIG. 2.



Inset 1.

Inset 2.

Diagram showing a foul wound with a lymph-leech *in situ*. Inset 1: Microscopic film from the pool of corrupted pus with a sero-saprophytic and serophytic infection. Inset 2: Microscopic film of the uncorrupted fluid from the belly of the lymph-leech showing a purely serophytic infection (streptococci).

but also in blood fluids whose alkalinity has been blunted off. Only a few species of microbes, and of these the streptococcus and the staphylococcus are the most important, can grow also (but grow of course less freely) in the unaltered blood fluids. I have suggested that we should call the first of these classes of microbes *sero-saprophytes*; and the others, which can grow in unaltered serum, *serophytes*.

All this has brought home to you that we have in wounds two distinct types of exudate and two distinct types of infection. In a "foul wound" we have an exudate with reduced anti-tryptic power and a multiform sero-saprophytic infection. In a "clean wound" we have an exudate with undiminished anti-tryptic power and a purely serophytic (i.e., generally a strepto- or staphylo-coccic and occasionally a diphtheroid) infection.

We come therefore here to a broad therapeutic principle. A "foul" wound can be rendered "clean," and a sero-saprophytic can be converted into a purely serophytic infection, by bringing into the wound wholesome blood fluids. But there is also a corollary to this. When we have converted a primitively "foul" into a "clean" wound, we can gain nothing from flooding the wound with blood fluids. We shall, in fact, by such treatment only be supplying fresh culture medium for serophytes.

SEROPHYTIC INFECTIONS.

How, then, does the body combat serophytic infections? Manifestly it must do so by the aid of the leucocytes. The

blood from the finger, fill it into a narrow glass tube sealed at the end, introduce into this a glass lath (i.e., a slip cut from a microscopic slide), then centrifuge until we have a stratum of red corpuscles below with an overlying layer of leucocytes, and above this clear plasma; and then incubate at blood temperature for three-quarters to one hour.⁹ The leucocytes will now have emigrated and will have arranged themselves as a belt across the middle.¹⁰ We now extricate our lath from the clot and remove any adhering red corpuscles by washing with either serum or, as the case may be, physiological salt solution, and now impose our lath upon an agar surface implanted with staphylococcus or streptococcus.

Shall I tell you to what we can liken that experiment? It is as if a great number of small slugs had attached themselves across a sheet of glass in the form of a belt, and we had then, leaving the slugs just space to move, laid down that pane upon a surface of earth thickly implanted with grass seed. You will appreciate that the slugs would round about them eat up the sprouting grass, giving us a bare band which would contrast with the green background of the surrounding field. Now the effect as you see it in this drawing (Fig. 5. A and B) is just like that. We have across the middle of both these laths a clear band of agar and everywhere else a luxuriant microbic growth.

⁹ Vide THE LANCET, June 15th, 1918, Fig. 2.

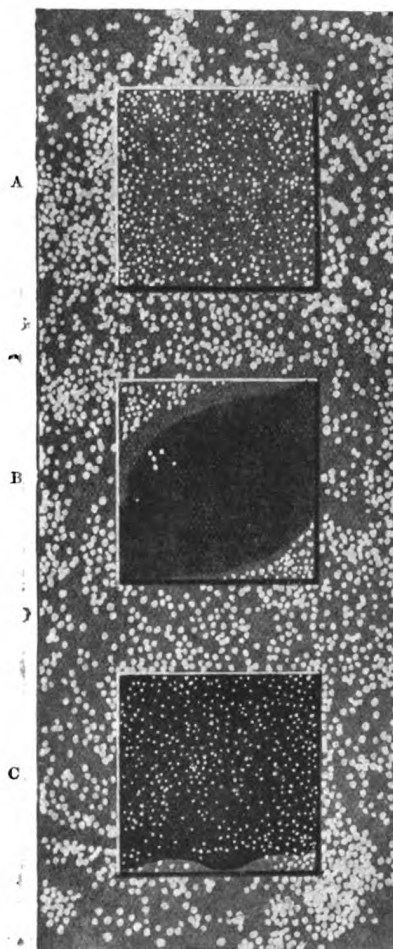
¹⁰ Vide THE LANCET, June 15th, 1918, Fig. 3.

There is here another point I want you to notice. It is a subordinate point, but at the same time a point of far-reaching importance. In the preparation we have on the one hand a lath which was washed off by serum and alongside it a lath which was washed off with salt solution. As you see, there is substantially the same amount of bactericidal effect under the one as under the other. I want you to reflect that that means that we get substantially the same amount of bactericidal effect where the leucocytes are brought into operation in the absence of serum as when they are brought into operation in serum.

DESTRUCTION OF MICROBES BY LEUCOCYTES.

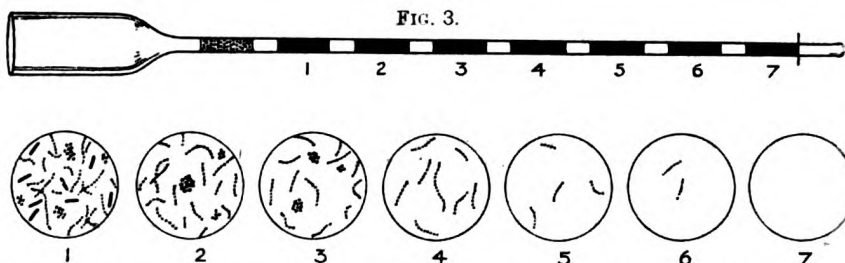
This experiment in full of instruction.

FIG. 4.



Drawing showing the effect of imposing on agar implanted with staphylococcus material from A, the upper layer (serum), B, the middle layer (leucocytic cream), and C, the lowest layer (red corpuscles), or centrifuged defibrinated blood.

11 Telergic destruction of microbes is witnessed also when we study what happens in the case where we implant microbes into blood, then, after centrifuging in flat emigration tubes, incubate for a few hours. We find then at the foot of the white coat emigration of leucocytes and phagocytic destruction of microbes, and immediately above the level at which this is occurring, in the majority of cases, a band which is bare of bacterial colonies and which contrasts in this respect sharply with all the region above it. The bare band here in question is clearly comparable to that obtained when the washed glass lath of the experiment described in the text is laid down on an infected surface.



Method of sero-culture with wash and after-wash implantation.—In the series of medallions are microscopic films showing in 1 sero-saprophytes and serophytes, in 2 and 3 serophytes only (streptococcus and staphylococcus), and 4, 5, and 6 again serophytes only (streptococcus).

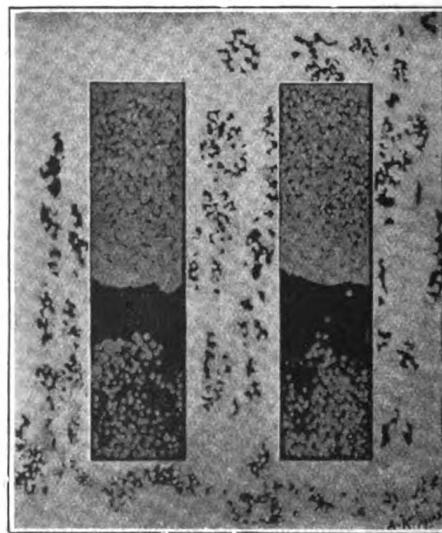
It teaches us what we must do when we want to extinguish a serophytic infection in wounds. It also, as I must explain, throws important light upon microbial destruction by leucocytes. Fig. 6, which reproduces a careful drawing of the surface of the two laths seen under an oil immersion, reveals that the microbial destruction was, in the case where the leucocytes were operating in serum, effected by phagocytosis; and in the case where the leucocytes were operating in salt solution, independently of phagocytosis. This is a new form of microbial destruction—a form which must be distinguished from that achieved by phagocytosis. I would, since we have here action exerted at a distance, propose to call this telergic destruction.¹¹

These experiments, which show that leucocytes can kill micro-organisms, and what here

interests us most—serophytic micro-organisms—can be repeated with freshly emigrated leucocytes obtained from a "clean wound" previously cleansed with physiological salt solution. These confirmatory experiments I owe to my fellow-worker, Dr. Fleming.

My next figure (reproduced here as Fig. 7) furnishes you with a précis of what is important to know about microbial destruction by pus. A drop of pus obtained from a clean wound recently washed out is taken and spread out on the surface of nutrient agar by the pressure of a cover-glass. In A, B, and C the pus was imposed upon a sterile surface, in D and E upon a surface implanted with staphylococcus. In A, B, and D we have what I have called *necro-pyo-cultures* or *necro-cyto-cultures*—that is, cultures made from a pus whose cells are dead. In A and D the cells were killed by heating

A FIG. 5. B

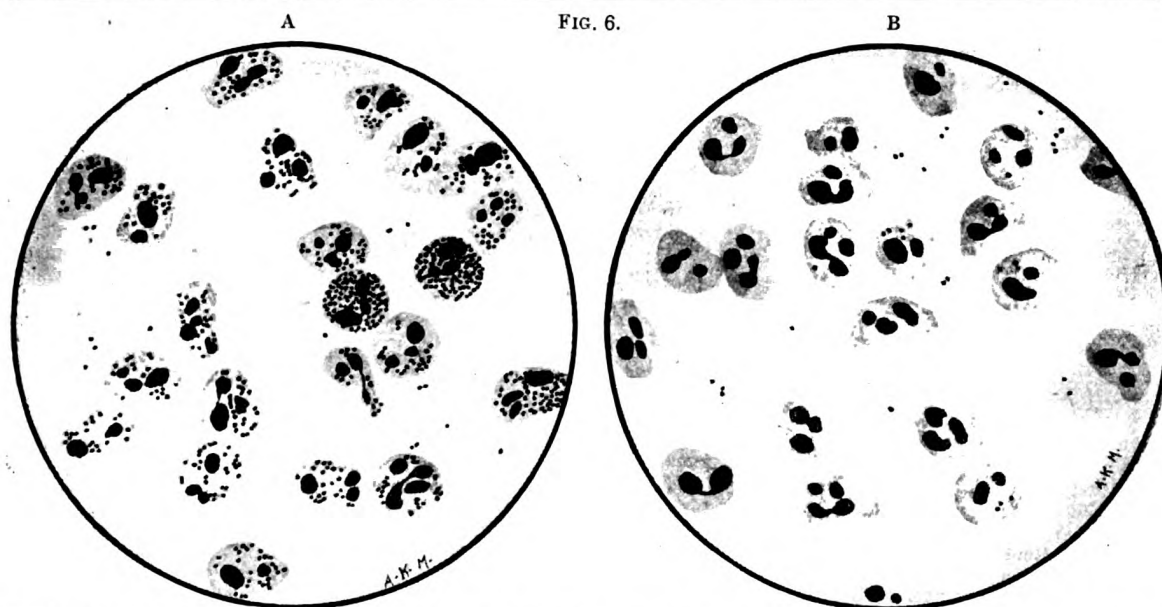


Drawing showing the effect of imposing leucocytes (adhering in the form of a belt to glass laths) upon an agar surface implanted with staphylococcus. In A the leucocytes were brought into operation in serum; in B in normal salt solution.

to 48° C., which is the thermal death-point of leucocytes; in B the pus cells were killed by simple desiccation. In C and E we have *bio-pyo* or *bio-cyto-cultures*—i.e., cultures made from a pus whose cells are alive and active.

You will see at a glance that in necro-cultures A and B the microbes of the pus have grown out into very numerous colonies. In sharp contrast with this is the event in the bio-culture C. Here the living pus cells have killed all the microbes with the exception of a few upon the circumference which have grown out in a marginal ring of serum expressed from the pus by the weight of the cover-glass. In D—which is again a necro-culture—we have a dense growth consisting of the microbes originally contained in the pus with, in addition, those from the implanted agar surface. And finally in E—which, again, is a bio-culture—the pus has killed off not only its contained microbes but, in addition, those with which the agar surface was implanted.

Let me show you the next figure (Fig. 8), and you have then, I think, the full story of the growth and destruction of serophytes in pus from a clean wound recently washed out. In A, which serves as the control, you have, as you see,



Drawings of the microscopic appearances seen on glass laths A and B shown in Fig. 5. In A leucocytes operating in serum—phagocytic destruction of microbes. In B leucocytes operating in physiological salt solution—telergic destruction of microbes.

only the customary few colonies round the margin of the bio-pyo-culture. In B a pallet of pus has been stirred up with the serum. Here you have a voluminous growth of micro-organisms in the serum surrounding the islands of pus. And once things have gone so far, as they have gone here, it will not be long before all the cells are poisoned off and microbes re-invade the substance of the pus.

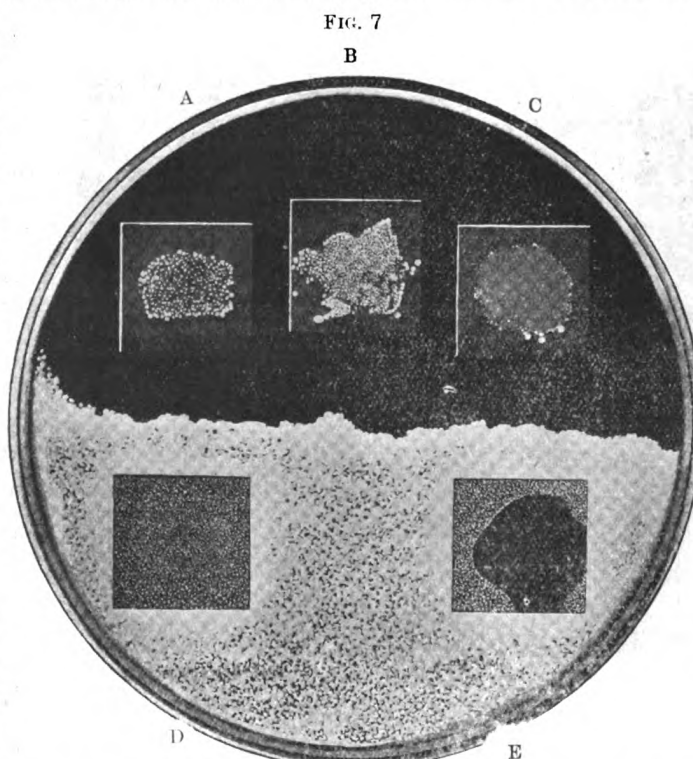
SUTURE OF WOUNDS.

As I have been telling you these things your minds have no doubt been running ahead, and you have been thinking of the bearing of all this upon the suture of wounds. It has, of course, obvious applications. It shows you in the first place that if the surface of the wound is not sterile, that is no reason for deferring suture. The pus with which we operated in these experiments was, when taken from the wound, full of living microbes; and none the less it turned out that this pus was, when we provided proper conditions for the leucocytes, competent to kill not only the contained microbes, but also that large number more that we added. Now when we bring together two surfaces of a wound each furnished with active leucocytes fresh from the blood-vessels we are providing for those leucocytes far more favourable conditions than when we impose them in nutrient agar and cover them in with a cover-glass; and, moreover, when we operate in

vivo, we can count upon the continuous new arrival of leucocytes from the blood stream.

Successful suture of an infected wound is therefore not a thing to be wondered at. Failure is what stands in need of explanation. There are three main sources of failure. The first is the leaving behind of corrupted pus. This, if a sufficient exudation of wholesome lymph does not intervene to prevent such event, will little by little corrupt the local exudate; and there will then come into existence in the depth of the wound an ec-phylactic focus in which not only sero-phytic, but also all manner of sero-saprophytic micro-

organisms will grow unrestrained. This was wont to happen in the early period of the war with amputations that were sent down from the front sutured. The second source of failure is the leaving of dead spaces. For dead spaces rapidly fill up with exudate; and such exudate, even if it be of full anti-tryptic power, will create an ec-phylactic focus in which the streptococcus and staphylococcus will grow. The third source of failure—and to this and the last mentioned is to be traced the erroneous doctrine of the impossibility of successfully suturing over a streptococcal infection—is default of leucocytic emigration into the wound. When we consider the success of retarded primary suture, and the failure of early primary suture in streptococcal wound infections, we cannot, I think, doubt that the difference must lie in the fact that



Drawing made after 24 hours of specimens of pus from a clean wound (recently washed out with normal salt solution) imposed under cover-glasses on sterile agar and agar implanted with staphylococcus. A, pus heated to 48° C. B, dried pus. C, living pus. D, pus heated to 48° C. E, living pus.

in the former case an abundance of, and in the latter few or no leucocytes are brought into operation.

ANTI-MICROBIC POWERS OF SERUM.

You have by this time very clearly appreciated where lies the weak point in our defence against micro-organisms. The

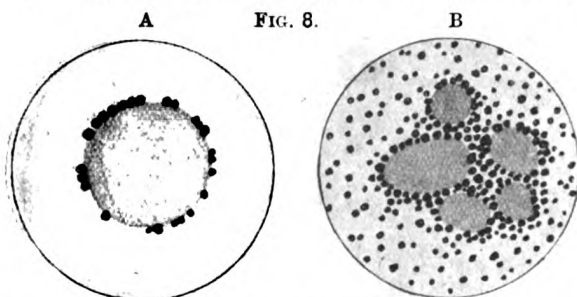


FIG. 8. Specimens of pus from a clean wound imposed on sterile agar under cover-glasses and cultivated 24 hours. A, living pus. B, ditto which had been stirred up with a little sterile serum.

weak point in our armour lies in this that the normal blood fluids provide a culture medium in which serophytic microbes can grow and multiply.

Is Nature then—so we asked ourselves—incompetent to strengthen that weak place in her defences? It does not come into consideration here that an increase in the opsonic power of the blood is obtained in response to inoculations and auto-inoculations of staphylococcus and streptococcus. For that could be useful only in the case of the leucocytes having access to the microbes. But it does come under consideration that the body responds to all wound infections (I drew attention to this early in the war), to many other

ever acquired we should expect to find it in patients suffering from septic infection with severe auto-inoculations.

We accordingly examined the serum of such patients, employing the wash and after-wash implantation into serum which I have already described to you in connexion with making cultures from pus. Here I employed as my implanting fluid instead of pus a 20-fold diluted 24-hour broth culture of streptococcus to which was added what I call a wash of one day old broth culture of staphylococcus. The serial cultures obtained from such plantings into the sera of septic patients, after remaining over-night in the incubator, were examined microscopically and by subculturing on agar. We obtained in this way evidence that the serum in septic infections does acquire a power of killing serophytic organisms. That bactericidal effect was exerted both upon the staphylococcus and upon the streptococcus concurrently. You appreciate what a large issue this last-mentioned fact opens up. It brings up the issue of non-specific immunisation.

To make any further advance it was obviously incumbent to proceed by the method of inoculation. We chose rabbits for our experiments, and we planned to observe not only the circulating blood, but also a sample of blood which should be shut off from contact with the tissues, and also samples of lymph obtained from the subcutaneous tissue. We also arranged to institute tests immediately, and then at short intervals, after the vaccine had entered the blood. This, of course, involved inoculating intravenously.

In order to obtain blood cut off from contact with the tissues we isolated the jugular vein, ligaturing off all lateral affluents, and passing ligatures under the vein some little distance apart so as to tie off the included portion of the vessel as soon as the vaccine had been carried round the circulation. To collect the lymph from the subcutaneous tissues we introduced pieces of sterile lint aseptically, and when these had remained in position for the desired period we removed them, and pressed out the contained fluid aseptically. The pieces of lint were inserted either some time before the inoculation was given, or immediately after, or later—according to the particular stage at which we wanted to begin the collection of lymph. The animal received in each case either a dose of staphylococcus or streptococcus vaccine; and the procedures employed in testing the bactericidal power of sera or lymph were identical with those employed in testing the sera of the septicemic patients.

Bactericidal Powers of Serum and Lymph after Vaccination.

The results obtained in an experiment of this kind conducted with a dose of staphylococcus vaccine containing $2\frac{1}{2}$ million microbes are shown in the drawing (Fig. 9). We have here agar slopes divided up horizontally into compartments and implanted, in each case proceeding from above downwards, with material from a series of wash and after-wash sero- or lymph-cultures made in a capillary pipette.

On the left hand side of the figure we have cultures made from (A) serum- and (B) lymph-cultures, the serum and lymph in question having been obtained from the

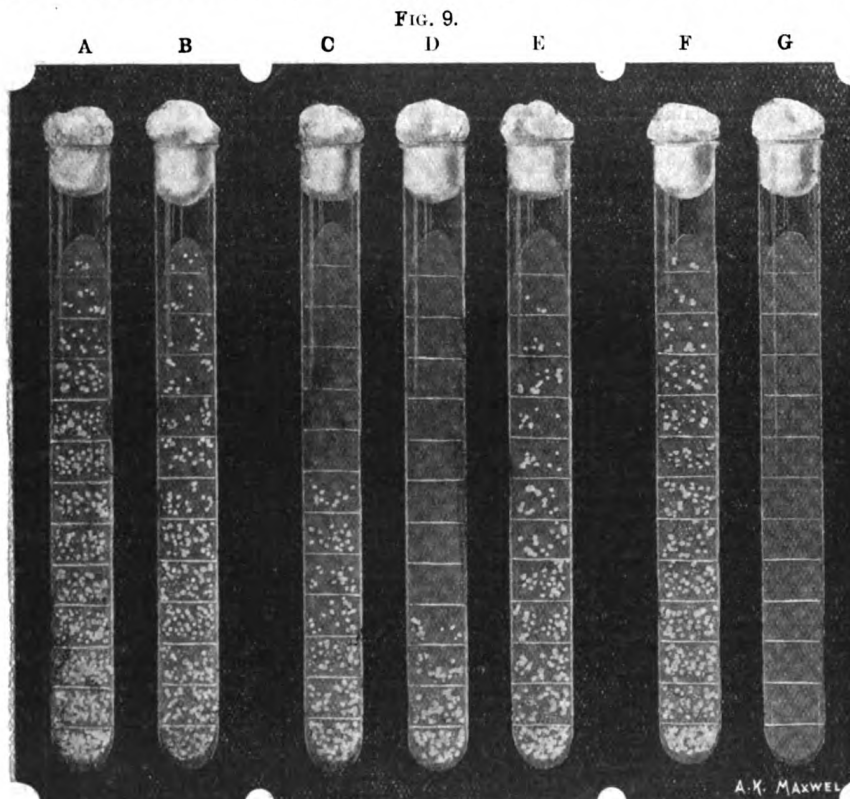


FIG. 9. Sero- and lymph cultures from a rabbit inoculated with staphylococcus. Description in text.

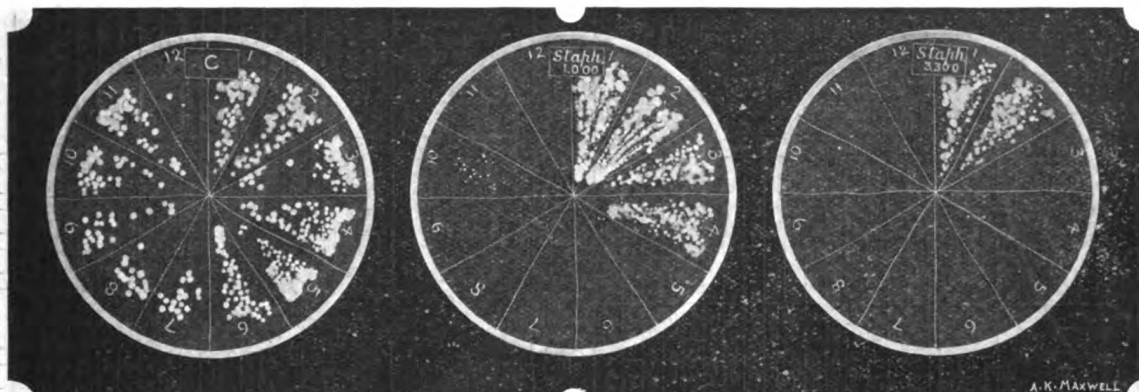
animal immediately before intravenous injection of the vaccine. We have here in each case a growth of both streptococcus and staphylococcus in the whole 13 compartments. In the centre of the figure we have cultures derived from samples of blood and lymph withdrawn two hours after inoculation and implanted with the same

animal immediately before intravenous injection of the vaccine. We have here in each case a growth of both streptococcus and staphylococcus in the whole 13 compartments. In the centre of the figure we have cultures derived from samples of blood and lymph withdrawn two hours after inoculation and implanted with the same

mixture of microbes used for the first serum and lymph. We have at C a tube implanted with the series of sero-cultures from the circulating blood showing growth only in 7 out of the 13 compartments; at D a tube implanted with the sero-cultures from the blood isolated in the jugular vein, with growth only in four compartments; and at E a tube implanted with a series of lymph cultures

shall presently furnish you with further evidence of such non-specific immunisation. But I want before going further to bring out three points. The first is that we are not yet sufficiently masters of the conditions to obtain with constancy results like those here shown. In particular, when we employ too large doses of vaccine we get instead of an epi-phylactic an apo-phylactic result. The second point is that my fellow-

FIG. 10.



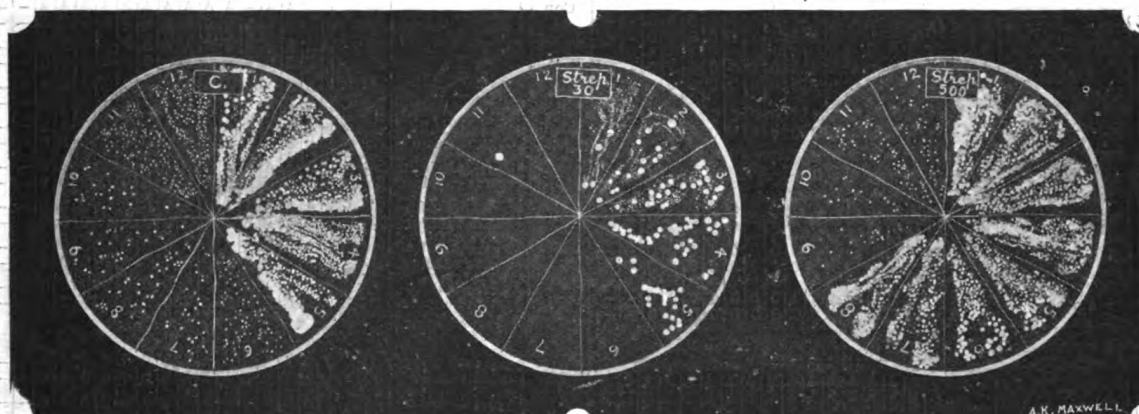
Illustrates Experiment 1 in the Table.—On the left hand are the results obtained with the serum of the control blood; in the middle those obtained with the serum of the blood inoculated in vitro with 1000 staphylococci per c.cm.; and on the right those obtained with the serum of the blood inoculated with 3300 staphylococci per c.cm. In the drawing of this plate a few small colonies of streptococcus ought to have been inserted in Compartments 3 and 4.

from the subcutaneous tissue with growth in all 13 compartments. The result in the first of these tubes shows that the serum of the circulating blood—i.e., of the blood which is in chemical interchange with the tissues, has developed bactericidal properties.¹² The results of the third tube show that these bactericidal properties are not derived from the subcutaneous tissue. And the middle tube shows that bactericidal properties can be developed in the fluids of a sample of blood tied off in a vein.

On the right of the figure are cultural results obtained with samples of serum from the circulating blood and lymph from the subcutaneous tissues taken 48 hours afterwards and implanted with a mixture of microbes similar to that employed before. It will be seen that the circulating

worker, Dr. Leonard Colebrook, has in a series of control experiments in which lint was implanted aseptically into rabbits without any administration of vaccine, obtained a lymph with a bactericidal potency quite comparable to that obtained in vaccinated animals. Lastly, I would remind you of that non-phagocytic, or as I have called it, *telergic* destruction of microbes which is obtained when leucocytes are imposed upon a surface implanted with microbes. It would seem probable that there is a close relation between this and the non-specific bactericidal effect exerted by the fluid expressed from the implanted lint; also possibly between this and the development of non-specific power in the serum after intravenous inoculation of vaccines; and possibly between all these and what I am now about to

FIG. 11.



Illustrates Experiment 2 in the Table.—On the left are the results obtained with the serum of the control blood; in the middle those obtained with the serum of a blood inoculated with 30 streptococci per c.cm.; on the right those obtained with the serum of blood inoculated with an overdose of vaccine (500 streptococci per c.cm.).

blood has, so far as can be judged, returned to its original condition. We have a culture of staphylococcus and streptococcus in all the 13 compartments. The subcutaneous lymph, on the other hand, has killed all the implanted microbes.

It will be seen that the results furnish clear evidence that here in response to inoculations of a staphylococcus vaccine the serum and lymph have acquired bactericidal powers for both the staphylococcus and streptococcus. I

describe to you—the acquirement of bactericidal power by the serum when we add vaccine to blood in vitro.

IMMUNISATION IN VITRO.

Let me before I pass on to deal with this explain to you the lines of thought which led us to look for such immunisation in vitro. The results obtained with blood confined in the jugular vein immediately invited us to ask: Seeing that bactericidal power is developed in blood which is after inoculation isolated and incubated in vivo, should not the same result be obtained when after inoculation we withdraw blood

¹² The blood of the rabbit here in question had begun to manifest bactericidal power already within two minutes after the injection of the vaccine.

and incubate in vitro? And if it should prove that bactericidal power is also under these conditions obtained, should it not also be obtained when we work entirely in vitro? In both these directions expectation has been borne out by experiment. When we have inoculated in vivo we get our result whether we confine the blood in the jugular and incubate in vivo; or bleed and incubate the blood in vitro. And again we get our result just as well when we inoculate in vitro and incubate in vitro, as when we inoculate in vivo

Table of Experiments showing that the Serum Acquires Non-Specific Bactericidal Powers when the Blood is Inoculated in vitro with a Variety of Vaccines.

Experiment I. (vide Fig. 10).

Con. bl. = Control blood. Vac. bl. = Vaccinated blood.

| Serum derived from— | Number of microbes added per c.cm. of blood. | Microbes employed for the test implantation. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------|--|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Con. bl. | — | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | — | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| ac. bl. | 10,000 sta. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 5,000 sta. | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 3,300 sta. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1,000 sta. | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |

Experiment II. (vide Fig. 11).

| | | | | | | | | | | | | | | | | | | |
|----------|----------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | — | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| Vac. bl. | 500 str. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 60 str. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 30 str. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

Experiment III.

| | | | | | | | | | | | | | | | | | | |
|----------|------------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Vac. bl. | 2,500 sta. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 2,500 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

Experiment IV.

| | | | | | | | | | | | | | | | | | | |
|----------|------------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Vac. bl. | 4,000 sta. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 4,000 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

Experiment V.

| | | | | | | | | | | | | | | | | | | |
|----------|--------------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | — | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| Vac. bl. | 500 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1,000 sta. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 2,000 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 3,300 sta. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 5,000 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 10,000 sta. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 100,000 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

and incubate in vitro. That is, we get when we employ large doses of vaccine an apophylactic change which renders the blood fluids a better cultivation medium for serophytes; or we get, but less regularly (for all the factors are not known to us), an epi-phylactic change in the form of a development of bactericidal power in the serum. The

Experiment VI.

| Serum derived from— | Number of microbes added per c.cm. of blood. | Microbes employed for the test implantation. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------|--|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Con. bl. | — | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Vac. bl. | 1,000 sta. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 5,000 sta. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

Experiment VII.

| | | | | | | | | | | | | | | | | | | |
|----------|------------|--------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | — | Streptococcus (P) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| Vac. bl. | 50 pn. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 100 pn. | Streptococcus (P) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 500 pn. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 2,000 pn. | Streptococcus (P) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 10,000 pn. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

Experiment VIII.a.*†

| Serum derived from— | Volume of vaccine added per l.c.cm. of blood. | Microbes employed for the test implantation. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------|---|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Con. bl. | — | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | — | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| Vac. bl. | 1/1000th influ- enza vaccine. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1/1000th influ- enza vaccine. | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 1/1000th influ- enza vaccine. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1/1000th influ- enza vaccine. | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 1/1000th influ- enza vaccine. | Staphylococcus (A) | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1/1000th influ- enza vaccine. | Streptococcus (B) | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |

Experiment VIII.b.

| | | | | | | | | | | | | | | | | | | |
|----------|------------------------------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vac. bl. | 1/1000th mixed cold vaccine. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1/1000th mixed cold vaccine. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 1/1000th mixed cold vaccine. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1/1000th mixed cold vaccine. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |
| " | 1/1000th mixed cold vaccine. | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | 1/1000th mixed cold vaccine. | Staphylococcus and streptococcus. | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E |

* The "influenza vaccine" here employed was that made up to the Army formula and the "mixed cold vaccine" was that prepared at the Inoculation Department of St. Mary's Hospital. The formulae of the vaccines are as follows:—Influenza vaccine: Pneumococcus, 200; streptococcus, 80; Pfeiffer's bacillus, 60 millions per c.cm. Mixed cold vaccine: Pneumococcus, 30; streptococcus, 12; Pfeiffer's bacillus, 300; staphylococcus, 300; Friedländer's bacillus, 30; bacillus septus, 50; micrococcus catarrhalis, 30 millions per c.cm.

† I am indebted to my fellow-worker, Lieutenant-Colonel F. J. Clemenger, U.S.M.S., for this experiment.

Experiment IX.

| Serum derived from— | Number of microbes added per c.cm. of blood. | Microbes employed for the test implantation | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------|--|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Con. bl. | — | Staphylococcus (A) and streptococcus (B). | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vac. bl. | 5,000 typhoid. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 25,000 typhoid. | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 50,000 typhoid. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 100,000 typhoid. | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 200,000 typhoid. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Experiment X.

| | | | | | | | | | | | | | | | | | | |
|----------|------------------|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus and streptococcus. | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vac. bl. | 5,000 typhoid. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 25,000 typhoid. | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 50,000 typhoid. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 100,000 typhoid. | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 200,000 typhoid. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | E | E | E | E | E | E | E | E | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Experiment XI.†

| | | | | | | | | | | | | | | | | | | |
|----------|-----------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Con. bl. | — | Staphylococcus. | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Vac. bl. | 1,000,000 gonococcus. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 50,000 gonococcus. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 5,000 gonococcus. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 500 gonococcus. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 50 gonococcus. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 5 gonococcus. | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | — | | A | A | A | A | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

† I am indebted to Colonel Clemenger for this experiment.

Experiment XII.†

| Serum derived from— | Weight of bacterial substance added per c.cm. of blood. | Microbes employed for the test implantation. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------|---|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| Con. bl. | — | Staphylococcus (A). | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| " | — | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| Vac. bl. | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| " | 1/1000th mg. tuberculin B.E. | | A | A | A | A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

† I am indebted to Colonel Clemenger for this experiment.

experiments which are here tabulated (those cited are, of course, selected experiments) supply exemplification of apo-phylactic and epi-phylactic changes—i.e., positive and negative phases produced by the inoculation of vaccines in blood in vitro.

The technique employed was as follows. A series of dilutions of the vaccine were made in physiological salt solution. Blood was then obtained¹³ by a puncture made into a sterilised finger or it was drawn off from a vein. In the former case it was collected on a paraffin-coated slide. Then nine volumes of blood and one volume of the first dilution of vaccine were mixed and aspirated into a pipette and sealed up. And so on throughout the series until finally (for the purposes of control) 9 volumes of blood were mixed with 1 volume of physiological salt solution. The bloods were then placed in the incubator for periods of 2 to 3 hours (Experiments 1, 3, 4, and 6), or 6 hours (Experiment 9), or 18 to 24 hours (Experiments 2, 5, 7, 8, 10, 11, and 12). They were then centrifuged and the supernatant serum drawn off. This was implanted by the wash and after wash method with a dilution of a staphylococcus culture; or with a mixture of staphylococcus and streptococcus (a 16–24-fold dilution of a 24-hours broth culture of streptococcus with $\frac{1}{4}$ wash of staphylococcus); or in one instance with a mixture of staphylococcus and pneumococcus. The capillary pipettes containing the implantations into serum were then incubated overnight, and the contents blown out in separate drops on to sterilised slides. Preparations were then made for microscopic examination, and subcultures were made either upon agar slants divided up as shown in Fig. 9, or upon agar poured into Petri dishes divided up after the manner of a dial (Figs. 10 and 11).

NON-SPECIFIC IMMUNISATION.

Let us just glance at the prospects which are here opened up. In the foreground stands the question of non-specific immunisation. That immunisation is always strictly specific counts as an article of faith; and it passes as axiomatic that microbial infections can be warded off only by working with homologous vaccines; and that we must in every case before employing a vaccine therapeutically, make sure that the patient is harbouring the corresponding microbes. I confess to having shared the conviction that immunisation is always strictly specific. Twenty years ago, when it was alleged, before the Indian Plague Commission, that antiplague inoculation had cured eczema, gonorrhoea, and other miscellaneous infections, I thought the matter undeserving of examination. I took the same view when it was reported in connexion with antityphoid inoculation that it rendered the patients much less susceptible to malaria. Again, seven years ago, when applying pneumococcus inoculations as a preventive against pneumonia in the Transvaal mines, I nourished exactly the same prejudices. But here the statistical results which were obtained in the Premier Mine¹⁴ demonstrated that the pneumococcus inoculations had, in addition to bringing down the mortality from pneumonia by 85 per cent., reduced also the mortality from "other diseases" by 50 per cent. From that on we had to take up into our categories the fact that inoculation produces in addition to "direct" also "collateral" immunisation. This once recognised, presumptive evidence of collateral immunisation began gradually to filter into our minds. Among, I suppose, many thousands of patients treated by vaccine therapy in private and in hospital, it happened every now and then that a patient was treated with a vaccine which did not correspond with his infection, and that that patient indubitably benefited. Again, it was not an uncommon experience for the subjects of a very chronic infection (such as pyorrhoea) who were treated first by a stock vaccine, and afterwards with an auto-vaccine, to assert that they derived more benefit from, and to ask to be put back upon treatment by, the stock vaccine.

From such cases hints are conveyed to us that there may exist a useful sphere of application for collateral immunisation; and that such sphere may, perhaps, be found in those cases where the infection is of very long standing, and where the patient has become very sensitive to, and has probably come very near the end of his tether in the matter of

¹³ In Experiments 1 to 8 the blood was obtained from A. E. W.; in Experiments 9 to 11 from other laboratory workers, and in Experiment 12 from a patient.

¹⁴ Wright: On the Pharmacotherapy of and Preventive Inoculation against Pneumonia. Constable, London, p. 110.

immunising response to, the particular species or strain of microbe with which he is infected. It will, with regard to such patients, be remembered that they constitute the third of those three classes of cases to which I referred at the outset of this lecture as very intractable to vaccine therapy.

We are, however, here considering primarily the question of principle; and in connexion with this what is of fundamental importance is: that we should discard the confident dogmatic belief; that immunisation must be strictly specific, and that we should in every case of failure endeavour to make our immunisation more and more strictly specific. We should instead proceed upon the principle that the best vaccine to employ will always be the vaccine which gives on trial the best immunising response against the microbe we propose to combat.

I would point out that this would almost certainly not involve any revolutionary change in the accepted practice in either serum therapy or in prophylactic or ordinary therapeutic inoculation. But it would mean taking into account in cases which proved intractable to treatment with the homologous vaccine the possibility of seeking for collateral immunisation by inoculating a microbe or mixture of microbes other than that with which the patient is infected. The trial of this procedure might perhaps recommend itself where from the outset there is very little immunising response to the homologous vaccine, and also where, as in very long-standing cases of tubercle or streptococcus infection, the power of direct immunising response to the corresponding vaccines is becoming exhausted.

PRACTICAL APPLICATIONS OF THE IN VITRO METHOD.

I spoke above of the vaccine which gives on trial the best immunising response against the microbe we want to combat. What was in my mind was immunising response *in vitro*, and I have it in view that it may become a practicable routine measure to test the response of the patient's blood *in vitro* by experiments such as those which are incorporated in the Table of experiments. You will appreciate that as soon as we shall have learned all the determining factors which here come into play, we shall be in a position not only to test the efficacy of vaccines on normal blood *in vitro* (as was done, for instance, in Exps. 8a and 8b), but also in a position to determine upon the patient's blood *in vitro*—thus avoiding the necessity of tentative experiments *in vivo*—what vaccine, and what dose of that vaccine, will give us the desired effect. I did this in a case of which I shall presently have to tell you. But let us note in the present connexion that in choosing the dose of vaccine for addition to the blood *in vitro* we shall have to take a submultiple of the dose we should tentatively employ upon the patient. If we were operating upon 1 c.cm. of blood we should obviously have to consider that we were dealing with 1-5500 approximately of the patient's blood volume, and since the fluid in the tissues must also come into consideration we should probably have to take into our calculations the relation which our 1 c.cm. of blood bears to the patient's body-weight.

There is still one other therapeutic prospect which I want you to consider. And again the practicability of exploiting this method will depend upon our obtaining constant immunising response to vaccine added to blood *in vitro*. When we have to deal with a general infection, and when surgical operations undertaken to abolish the ec-phylactic focus have failed, and where immunising responses cannot be obtained, there still remains, as a last resource—transfusion. But simple transfusion—and the method has been extensively tried in this war—has in these cases proved unavailing. It has even been held to do positive harm. That should not be a matter for wonder when we reflect that the normal blood fluids provide for serophytic microbes an excellent cultivation medium—generally a more favourable medium than the blood fluids of the patient. And from another point of view also the failure of simple transfusion should not surprise us, for though leucocytes, as I have shown you, do effective bactericidal work outside the blood, the conditions where the leucocytes are suspended in blood fluids are, as we have learned, unfavourable to their bactericidal operations. Appreciating these points you will see that the outlook for the patient would be much more favourable if we could take the donor's blood and immunise it *in vitro*, and so render the plasma bactericidal for the microbe with which the patient is infected.

IMMUNO-TRANSFUSION.

I had not very long before coming home an opportunity of putting this plan of campaign into execution.

The case I have here in view was that of a patient who was the subject of streptococcal wound infection with extensive involvement of the sacrum and ilium, and who was suffering from a continuous high temperature, which had reduced him to such a condition that his life was despaired of. A secondary very radical operation with chiselling of bone having under these conditions been undertaken without any improvement in his condition, it was determined to try a transfusion of blood which should be immunised *in vitro* against the patient's streptococcus. With a view to ascertaining whether such a blood could be obtained for the patient a syringeful of blood was taken from the appointed donor on the day before that fixed for the operation, and different portions of this blood were digested for three hours *in vitro* with a series of graduated dilutions of a staphylococcus and also of a streptococcus vaccine. The centrifuged sera with controls were then implanted by the wash and after-wash method with a mixture of staphylococcus and the patient's own streptococcus. Of all the sera thus obtained that of the blood portion which had been digested with 1000 staphylococci per c.cm. gave the best result. While the serum from the control blood grew staphylococcus up to the thirteenth and streptococcus up to the fourteenth dilution, the serum from the blood which had been digested with 1000 staphylococci per c.cm. grew the staphylococcus up to the ninth and streptococcus only up to the sixth dilution. In view of this result we added to the litre of blood, which was drawn off from the donor into a paraffin-coated receptacle, a quantum of vaccine corresponding to 1,000,000 staphylococci. After the transfusion of this blood a very striking change came over the patient's condition. His temperature promptly fell and he rapidly became afebrile. The wound also rapidly healed; and his serum, which before provided for the streptococcus a much better culture medium than our normal sera, was found after transfusion to inhibit the growth of this organism.

The therapeutic method here employed is, as you see, a combined method of serum therapy and transfusion. We may perhaps call it "immuno-transfusion." Over the ordinary methods of serum therapy which have been tried for septicæmic cases it has, of course, the advantage that we are dealing with compatible human blood, and can therefore, if we succeed in obtaining protective substances, incorporate these in indefinitely large quantities.

KNOWLEDGE GAINED BY RESEARCH DURING THE WAR.

With this I have completed what I have to say about the new outlook in the field of immunisation, opened up by the work in which Dr. Leonard Colebrook and I have collaborated. Let me, in conclusion, take you back to the point from which this lecture set out. I began, you will remember, by pointing out to you that this war has demonstrated to all two facts in connexion with immunisation: *first*, that when proper conditions have been established in infected wounds and these are thereupon sutured the protective agencies of the body can (except in the case of a streptococcus infection in a wound that has not yet reacted) be trusted to extinguish the infection; and *secondly*, that resistance to typhoid fever can be greatly reinforced by the inoculation of typhoid vaccine.

Now it lies with each of us to say how much or how little he proposes to learn from these favourable positive results—from this bright side of the picture—and also from the dark side of the picture which presented itself in the sepsis and gas gangrene of the earlier period of the war. If we put out of sight everything but the crude data of clinical experience we shall have learned nothing except what to do and leave undone when we are dealing with wounded men in war; or, as the case may be, with a population which is exposed to risk of typhoid infection. We shall, in other words, have carried away from the welter of this war only an empirical knowledge, which will be of very little utility for the purposes of peace; or, indeed, for any emergency other than the recurrence of war. If, on the other hand, we manage to penetrate to the principles which underlie our experience we shall have possessed ourselves of that kind of knowledge which will find continual new applications; and we shall have learned all that is of really fundamental importance in relation to the treatment of bacterial infections. To that end let me

try to summarise for you in a very few words what research has taught us with respect to the nexus of events in this war.

We can now see that the septic catastrophes of the earlier period of the war—the putrid abscesses of the wounds that had not been opened up at the front, and the frequent gangrene of the amputated stumps which had been there sutured, were due to the fact that there was left behind an ec-phylactic focus in which all the defensive agencies of the body—both the serum and the leucocyte defence—were abolished—in other words, a focus in which all serophytic and sero-saprophytic microbes could freely multiply. Exactly the same applies to the open sloughing wound. Here the original bruising of the tissues, and the superadded desiccation—which closes down the capillary circulation—created an ec-phylactic focus.

The felicitous results which have in the latter period of the war been achieved by timely opening up of the wound and the excision of all devitalised tissues have been due to the fact that there was now not left behind any ec-phylactic focus in which sero-saprophytic microbes could cultivate themselves. And we have seen that the failures which have occurred when immediate primary suture was undertaken in presence of a streptococcus infection may almost certainly be set down to default of leucocytic emigration and exudation of blood fluids into the wound; while the success of retarded primary suture in cases of streptococcus infection is almost certainly due to free leucocytic emigration and the limitation of exudation.

With respect to inoculation, it is important to grasp the principle that, whether we are dealing with preventive or therapeutic immunisation, we can expect results only when we have good epi-phylactic response in combination with efficient kata-phylaxis. To this combination we owe the success which has attended antityphoid inoculation. It is, moreover, important to realise that the inefficacy of all forms of inoculation as applied to such septic conditions as presented themselves in wounds in the earlier period of the war abates nothing from the legitimate claims of vaccine therapy. For it is a first principle of that method that in ec-phylactic conditions, such as those of gravely septic wounds, the defensive agents of the blood cannot, until the proper kata-phylactic measures have been taken, come into operation.

INFLUENZAL PNEUMONIA:

BILATERAL RIGIDITY, SPINAL MENINGITIS WITH
HEMORRHAGE INTO THE THECA VERTEBRALIS
AND NERVE ROOTS.

By SIR WILLIAM OSLER, BART., M.D. OXFORD.

MENINGITIS has been a common complication in the pneumonia of the present epidemic. In ordinary pneumonia the incidence is only from 2 to 3 per cent. of the fatal cases, sometimes much higher, as in my Montreal series. The cerebral meninges, particularly of the cortex, are more often involved than the spinal. Spasticity, a well-marked feature of the epidemic form, was not present in any one of the 25 cases of pneumonic meningitis that occurred in my clinic at the Johns Hopkins Hospital. I have no personal experience of an influenzal meningitis. In my "System of Medicine" Lord refers to 11 cases in which the Pfeiffer bacillus was found in the exudate. The following case is worth recording from the unusual character of the lesions and from the possibility of its influenzal nature.

Notes of Case.

I was making "rounds" with my class at the Radcliffe Infirmary on Jan. 26th, when Colonel W. Collier sent for us to out-patients' as a man with remarkable symptoms had just been sent in by Dr. Rice. I dictated the following note:—

A fairly well nourished man, aged about 43, with a sallow complexion and a distressed appearance; he answers questions clearly and says he has been ill for three days. Respirations 44, with a marked expiratory rattle; pulse 132, regular; temperature 99° F. Facial muscles move freely, no paralysis, opens mouth readily and protrudes tongue; pupils are equal, dilated, and react to light; no ocular paralysis. The neck is so rigid that he cannot lift the head from the pillow. The spine is arched, the muscles strongly contracted.

Both upper limbs are in tonic spasm, the arms more than the forearms; he can extend and flex the fingers; he cannot move the arms from the side; at intervals there is slight tremor. Both legs are rigid; the right is deformed from an old infantile paralysis; the left cannot be bent, the muscles stand out prominently, and the foot is extended; slight ankle clonus, knee-jerks not obtainable, nor the Babinski sign. On the skin of feet and ankles is a crop of fresh purpura. The breathing is largely abdominal, movements of the chest very slight, but more on the right than the left side. Dullness shading to flatness from the fourth left rib, extending into axilla and as high as angle of scapula behind; intense tubular breathing with fine crepitant râles. The heart sounds are clear.

The story was that he had been ill for three days with fever and cough, but there was no note about the rigidity.

The suggestion had been made that the case was tetanus, but there was no wound; the spasms were extensor and tonic in character, and not unlike those seen sometimes in cerebro-spinal fever. Then he had, in addition, well-marked purpura. Pneumonia is very rare as an early complication of cerebro-spinal meningitis. Altogether, as the pneumonia was so pronounced, I thought the spinal meninges were involved without, as is usual, the cortex of the brain. The lumbar puncture made by Dr. Lloyd was negative. Next day he remained very ill; the rigidity persisted; the temperature rose to 103°, the respirations 52. When I saw him at 2 P.M. he was still conscious, the face dusky and a little sallow, the back was very rigid, and on attempting to lift his head, the arms went into extensor spasm. The left leg could not be moved, and muscles and tendons stood out prominently; the lung condition was unchanged. The purpura had extended slightly over thighs and shoulders. The lumbar puncture by Major A. G. Gibson was again negative. He died at 3 o'clock. The blood cultures were negative.

Post-mortem.—Next morning, in the absence of Major Gibson, I made the post-mortem. The skin had a tinge of yellow; marked rigor mortis; purpura in parts mentioned; colour of muscles very deep red. Left lung airless, dark red in colour, pleura spotted with hæmorrhages, but no fibrinous exudate. On section much blood which, when washed off, left a mottled surface, with areas of greyish consolidation, surrounded by very dark red tissue—not the appearance of an ordinary lobar pneumonia, but the type of lesion seen in the present outbreak. Lower half of upper lobe in the same condition; the right lung was normal except for congestion at the base; very little exudate in the bronchi. The heart was normal; there were not the very dense blood clots in the cavities and in the vessels such as are seen in ordinary pneumonia. Abdominal organs showed no special changes; the spleen was small and the capsule wrinkled. The retroperitoneum presented a uniform sheeting of blood clot surrounding the vessels and extending over the psoas muscles.

The cortical vessels of the brain were engorged, the membranes very moist, but no exudate on cortex or base, except on the posterior surface of cerebellum there was a yellowish-white patch the size of a penny. The spinal cord had a thick buttery exudate over the cervical enlargement, less in the dorsal region and very abundant over the lumbar swelling and the cauda equina. There were no hæmorrhages; substance of the cord cut at different levels was moist and looked normal. Into the spinal theca and extending along the nerve-roots into the foramina was a uniform sheeting of hæmorrhage obliterating the spinal veins, in some places dense enough to cover completely the nerve-roots and involving their sheaths; it was more marked in the postero-lateral than in the anterior portions. There was no free blood in the spinal canal; the hæmorrhage was entirely into the theca.

The lumbar puncture on both occasions was "dry." The smears from the spinal exudate were negative; nothing grew on any of the ordinary media, and the blood cultures made by Major Gibson were negative. Sections of the lungs showed the lesions corresponding to the influenzal type of broncho-pneumonia, but Pfeiffer's bacillus was not isolated.

I do not remember ever to have seen the hæmorrhage into exactly the situation here described. It was probably responsible for the bilateral rigidity—a very variable feature in cerebro-spinal meningitis, but rarely so extreme or so tonic in character.

THE WASSERMANN TEST: A CRITICISM OF ITS RELIABILITY.

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AND

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A FIRM faith in the reliability of the Wassermann test, well justified by the very large number performed here, may not be too easy to express on paper; but we think the attempt may be of general interest at a time when the medical profession are especially interested in this question. We have tried in this hospital to criticise very closely the accuracy of our results. It would seem best to consider the question from two points of view: first, clinically; and secondly, a criticism of technique. Under the latter heading we wish to publish some laboratory results more purely technical, which we have obtained when titrating each complement in the presence of antigen.

Part I.—Clinical Criticism.

A great mass of figures could be obtained from the records, but the odd, apparently exceptional, results are the important ones for such an investigation as this; and they can only be criticised fairly by close study of the cases at the time.

During the first 10 months of 1918 the usual routine has made about 5800 Wassermann tests necessary. The figures we quote below will seem a small proportion, but from time to time, when opportunity has allowed, starting from the provisional diagnosis coming into the laboratory with the serum, we have studied closely batches of tests for several weeks on end; they have in no way been specially selected, and the conclusions we draw from them are quite in accordance with the accumulated experience of the clinical side of the hospital.

We are only able to study the readings required for routine work, and have not had the opportunity to make special tests for this paper because we have only sufficient accommodation in the Wassermann trays for the minimum number of tests that are required for the efficient diagnosis and treatment of so many patients; and many sera are sent to us from distant parts which we do not include here as we cannot see the cases clinically.

1. Cases Clinically Syphilitic.

(a) *Primary syphilitic sores.*—Out of a series of 117 primary sore cases 99 gave strong positive reactions, 8 gave partial positive results, and there were 10 negative readings, explained by the test being performed early in the disease. With spirochaetes demonstrated in the sore an early test to obtain a negative result may confirm the clinical opinion that the case is one of re-infection, in a patient with syphilis before and cured, and that it is not a relapse.¹

(b) *Secondary syphilitic cases and relapsed cases with secondary lesions,* such as condylomata, mucous patches, rash, &c.—In a series of 177 such cases 174 gave strong positive reactions, 2 gave partial positives, and one weakly positive. The three partial results were from relapsed cases treated formerly with "606"; they were not tested again after provocative injections.

(c) *Tertiary cases.*—Of 125 tertiary cases of all varieties 117 gave strong positive reactions, 5 gave partially positive, and 2 cases of leucoplakia, apparently syphilitic in origin, were negative; it is not impossible for cases with such healed lesions to give negative reaction. There remains one case of what appeared to be tertiary ulceration of the throat which gave a negative reaction here, and also at two other hospitals; the condition did not clear up very quickly under antisyphilitic treatment, but it healed, and the case was regarded as one of gummatous ulceration with a negative Wassermann.

(d) *After-treatment results.*—In a series of cases classified as primary syphilis, the result after the end of a minimal course (consisting of seven intravenous injections of "606" and seven Hg injections), was negative in 83.5 per cent. The total quantity of "606" was 2.8 g.

In a series of cases of secondary syphilis the percentage of negative results after a similar course was 58.1. The cases classified as secondary are those with condylomata, mucous patches, or a rash, so some of those under the heading of primary may be very late ones. The Wassermann test is taken quite soon after the last injection and may be more positive than it will be a few weeks later. We have only a small number of records where this point can be studied, but it has been noted a few times.

The figures under this sub-heading of after-treatment have only a small value as a criticism of the test, but they give a striking example of the need for early diagnosis. To summarise the clinically syphilitic cases, only one case with an active lesion failed to react at all (paragraph (d)), except the primary sore cases, where time must be allowed. It is not possible to make any definite statement from our own records as to the limits of this time, with or without a provocative injection. Most of our cases give some sort of positive reaction at the end of two or three weeks, but in some the delay has been exceptionally long. For primary cases the finding of spirochaetes is the routine method and the Wassermann test secondary. The change of a doubtful partial reading in a primary case to a strong positive after one injection of "606" is demonstrated regularly as a matter of routine.

2. Cases which Clinically are not Syphilitic.

(a) *Soft sore cases.*—Cases clinically soft chancre are not finally diagnosed as such until the patient has been under observation for a month from appearance of sore and then gives a negative Wassermann reaction. Though not practicable under present war conditions, we think that such cases should be under observation for not less than two months, and have the test repeated at end of second month.

We have analysed 547 cases, divided into two series: The first of 337 cases showed 12 positive Wassermann results; the cases were not specially studied at the time for this investigation, but the clinical cards for about half of these 12 were traced and showed that the cases were accepted for antisyphilitic treatment.

The second series of 209 cases was carefully studied to test the reliability of the Wassermann reaction, each unexpected result being investigated at the time. The pathologists frequently obtained a provisional diagnosis of soft sore in the laboratory, which was somewhat out of date or made before the patient was admitted, and by no means the clinical opinion at the time of the test; but the reading was given by them without any indication that the case might be syphilitic. Twenty-one such cases gave a positive result; and were very carefully investigated. Four were proved syphilitic by finding spirochaetes; 3 other cases showed evidence of syphilis as follows: one gave a definite history, with knowledge that his blood had been positive before, the second showed a tertiary skin lesion, and the third the scar typical of a primary granulating syphilitic sore on the penis. Of the remaining 14 cases 7 were sent by the clinician as venereal sores for diagnosis, very suggestive of primary syphilis, and after the result were accepted as such. Those of these cases tested after treatment gave a negative result, suggesting that a recent syphilitic infection had been cured. The 7 other cases were typical soft sore cases, with no evidence of syphilis, and there is no clinical explanation of the result. They were tested more than once, and those tested after treatment gave a positive result, as would be expected of a latent syphilitic, in contrast to the cases above, grouped as primary sores for diagnosis. There is no explanation, in the way of proof, but 7 such out of 209 men with venereal sores would not seem a very high proportion of latent syphilitics.

This series of 547 soft sore cases, which represents the whole batch for six months, is the most valuable one by way of normal control. A critic, the most prejudiced against the reliability of the test, could only object to about 3 per cent. of positive results. Considering that they all admittedly have venereal sores of some sort, it would not appear to show undue bias in favour of the test to claim so small a percentage as latent syphilitics.

(b) *Cases from the skin wards.*—Eighty-nine cases were sent in six months from these wards; in the laboratory when the reading is taken the presumption is that the case is not syphilitic. Of the 89 cases 78 were negative, being all

varieties of skin lesions, not syphilitic. The 11 remaining were as follows: Four strongly positive were tertiary skin lesions, quite obvious, being tested before treatment; four more strong positives were readily explained, a case of psoriasis gave a history of syphilis in 1917, a case of vitiligo the same, a case of impetigo showed tuberosities on the tibia and admitted syphilis, and another case of impetigo showed the scar of a primary granulating sore on the penis. One case of psoriasis gave a doubtful reading, with a bad serum control, and a case of psoriasis and another of vitiligo gave strong positives, which could not be explained. So that, finally, if the result is accepted as a sign of syphilis in these two cases it only means two latent syphilitics in 89 soldiers.

Of special skin cases one of the most interesting is the following. A case of papulo-squamous eruption, serpiginous and circinate in outline, on both arms, very suggestive of a tertiary syphilide, gave a negative reaction three times, the later ones after "606" injection; the condition was proved tubercular by microscopical examination of a section of the lesion.

It has been stated that psoriasis is a condition which may perhaps give a positive Wassermann reaction. As we quote one or two cases of this disease in our exceptions, it will give our figures a truer proportion to state that in one series of 110 consecutive cases of psoriasis tested in this laboratory there were 106 negative results; of the 4 other cases, 3 were obviously syphilitic, and there was 1 case with positive result which could not be explained.

We are indebted to Captain W. H. Brown, skin specialist to the hospital, for his clinical opinion, and for permission to publish these results of his cases.

3. A Group of Cases which Appeared to Give Exceptional Readings.

At a time when we were not taking the opportunity to follow and record all the laboratory readings, the following results, which appeared exceptional in the laboratory, were traced. They are not specially selected, because, although they are only taken irregularly, all those which were traced are recorded.

1. A case of psoriasis gave positive, retested positive, re-examination showed Argyll Robertson pupils, and the cerebro-spinal fluid 58 cells per c.mm. with positive Wassermann reaction.

2. A case of psoriasis gave positive reading twice; the c.s.f. showed nine cells per c.mm., and was positive in five and two volumes.

3. A chancroid case gave positive result; there was a history of syphilis nine years ago, with typical syphilitic scar on penis.

4. A venereal sore, more follicular in appearance, gave positive; the patient then gave a history of syphilis formerly, and the diagnosis was made of gumma.

5. A follicular sore, quite typical, gave positive, but there was a history of syphilis in 1912.

6. A rash, practically indistinguishable from that of secondary syphilis, gave a negative result three times (the last one after a provocative); the c.s.f. was normal. There was no history of syphilis, no condylomata, mucous patches, or adenitis; spirochaetes could not be demonstrated from the papules; a definite diagnosis was not made, but it was considered that syphilis was excluded; microscopical examination of a section of the papule showed no evidence of syphilis, but suggested psoriasis.

7. A rash, suggesting papulo-squamous syphilide, on the penis gave negative result four times; the final diagnosis was lichen planus.

8. Two cases of vitiligo gave positive results; one gave positive in c.s.f. in the more concentrated amounts; in the other case there were no evidences of syphilis.

9. A case of soft sore gave positive result; after provocative injection the result was negative; the first result was regarded as a mistake in technique (see Paragraph B in Part II.).

10. A partial positive result was negative after provocative injection; this was another technical error.

This small number, of what appears at first sight to be exceptional results, was picked out while some hundreds of routine tests were reported on. It is a very incomplete way of recording, but with the other readings agreeing with the clinical diagnosis such findings as the above give one great confidence in the test. They were, of course, recorded by

name and number at the time, and could again be verified by looking up the card.

A mass of statistics could be collected from the records of the hospital, speaking of thousands where we quote hundreds, but not necessarily of such general interest or so suitable for our investigation of the reliability of the Wassermann reaction.

Part II.—Criticism of Technique.

The routine method is almost identical with that described as the Rochester Row method,² using dropping pipettes to measure out the reagents, but in the last few months we have titrated the complement in the presence of antigen. The results of this control have been very striking, and we think a detailed account may be of interest.

A. Titration of Complement in the Presence of Antigen.³

The complement is titrated alone in the usual way, dilutions varying from 1/10 to 1/120 being put up with two volumes of saline and one volume of sensitised cells; it is incubated in the bath at 37° C. for half an hour and then the reading taken. Another row of tubes is set out with complement as above, plus one volume of antigen and one volume of saline. The complement and antigen are left for half an hour at room temperature and then half an hour in the bath (as they would be in the test proper), and then the sensitised cells are added. The reading is taken at the end of half an hour.

We have tested the complements of 50 guinea-pigs in this way, and find that the individual complements vary extraordinarily in the way they are absorbed by the antigen. We have classified them according to whether more or less than one minimal hæmolytic dose is absorbed. For example, if the complement titrated alone gives complete hæmolysis in 1/60 and titrated in the presence of antigen if 1/30 does not give complete hæmolysis, there is absorption of more than one M.H.D. There is the greatest variation, some complements being only slightly absorbed, most tending towards the absorption of one M.H.D., and our most striking example being a complement giving complete hæmolysis in dilution 1/60, which in the presence of antigen gave practically no hæmolysis in a dilution of 1/10.

Of the 50 guinea-pigs, the extract absorbed less than one M.H.D. of complement in 34, about one M.H.D. in 7, and more than one M.H.D. in 9. Out of these 9 there were 4 complements which were very markedly absorbed.

We have, as far as possible, investigated the errors which occur when there is excessive absorption of complement by antigen, and although the presence of serum in the test proper undoubtedly neutralises the effects of this absorption power in most cases, we have been able to change some of our readings by using a fresh complement not abnormally absorbed, and have no doubt that this titration of complement in the presence of antigen is an essential routine control of the test. And further, although the sera give better results than one might expect, we have found that cerebro-spinal fluid has little or no power of neutralising this absorption, and it is quite useless to attempt to test the Wassermann reaction of this fluid with a complement readily absorbed by antigen. For convenience we call complement titration alone control A, and in the presence of antigen control B.

Of the complements too much absorbed we have been able to make the following notes:—

1. Guinea-pig No. 3; complement control A, 1/60 tube practically clean, control B (in presence of antigen) 1/20 only partial hæmolysis. Two vitiligo cases and one chancroid case, which gave positive reactions, were proved negative by using a good complement. One chancroid case giving partial reaction was also proved negative.

2. Guinea-pig No. 5; complement A, 1/60 complete hæmolysis, control B, 1/10 practically no hæmolysis. Two cases of balanitis, giving positive reactions, proved negative with a good complement; and two more positives became partial reactions, one an early primary, and the other an after-treatment case. One c.s.f. showed no hæmolysis in any tube from 5 vols. to 1/5 vol., although there was no excess of cells.

3. Guinea-pig No. 15; complement A, 1/50 practically clean, control B 1/10 only partial hæmolysis. Two positive readings were changed to negative, one a case of optic neuritis, and the other, from another hospital, with no

history. Six c.s.f. all gave positive and partial results, although only one showed excess of cells. The readings showed no grading with the dilutions of c.s.f. Retested with a good complement, four of the fluids were absolutely negative; one (an after-treatment case) showed some reaction in the 5 vols. tube, and the one case with excess of cells remained positive in the undiluted fluid, with partial hæmolysis in the tubes with diluted fluid.

4. Guinea-pigs Nos. 18 and 19 both gave absorption of rather more than one M.H.D. With the former four c.s.f., and with the latter five c.s.f. gave partial reactions in high dilutions, as strong as in the more concentrated fluid, which were due to the complement antigen reaction.

5. Guinea-pig No. 21; complement A, 1/50 practically clean, control B 1/20 not quite complete hæmolysis. Two partial reactions and one positive were changed to negative. Eight c.s.f. were tested; one, with 58 cells per c.mm., was positive, grading from strong in 5 vols. to partial in 1/5 vol. of c.s.f. In the other 7, where the cells were normal, there were signs of complement extract reaction.

6. Guinea-pig No. 36; complement A, 1/60 nearly clean, control B 1/30 not quite so clean. One c.s.f. showed partial reactions, not grading with the fluid.

7. Guinea-pig No. 48; complement A, 1/60 nearly clean, control B 1/30 only partial. Nine positive sera were done again with a good complement, but all remained positive.

We have introduced one row of three tubes into the test proper as an antigen control, in which a volume of saline replaces the diluted serum of the other rows; we have called this control D. With a marked absorption of complement by extract these tubes may give little or no hæmolysis, and it is noticeable (as stated above) that on these occasions many tubes with sera present, give complete hæmolysis; but we have usually found that cerebro-spinal fluid shows much the same failure of hæmolysis as is recorded in Control D without grading according to the amount of cerebro-spinal fluid; for example, such a reading as this:—

| | | | | | |
|---------|---------|--------|-----|-----|-----|
| 5 vols. | 2 vols. | 1 vol. | 1/2 | 1/3 | 1/5 |
| ±± | ±± | ±± | ±± | ±± | ±± |

with a good complement this fluid was negative in all dilutions.

With the complement most completely absorbed (Guinea-pig 5), there were 12 tubes containing varying amounts of the one cerebro-spinal fluid, without any hæmolysis, although the fluid was normal in other respects.

In the back records of the hospital we find record of six cerebro-spinal fluids, all tested with the same complement, only one of them showing excess of cells, which are recorded as positive in all dilutions—that is to say, there are 72 tubes, where antigen was present, without any hæmolysis. It would seem probable that this complement, titrated with the antigen, would have shown much absorption, and if an antigen control had been in use the results might have been rejected.

With the worst complements, from this point of view, most normal sera will give negative results; with guinea-pig No. 5 there were 34 negative readings and 9 trace negative out of 77 bloods tested. We have tested the unsatisfactory complements with different antigens, but we find it is the complement which varies.

We have had a few opportunities of comparing absorption of complement in this routine Wassermann test with a method in which the antigen, much weaker, is incubated with the complement overnight in the ice-chest, and our limited experience would lead us to think there is not much difference.

We have had many opportunities—at the least 15—of re-testing the amount of complement absorbed by antigen when the complement has been preserved by freezing, and it does not appear to vary.

Practically, we should conclude that, if more than one M.H.D. of the particular complement is absorbed, all the positive sera results should be re-tested.

The chief inconvenience is in regard to cerebro-spinal fluid, because it does not keep well for the next day. We have found that it is quite reliable to trust to a frozen complement which we know is a good one, or else to test previously the guinea-pigs by bleeding from the ear, which latter proceeding is possibly the most convenient way of ensuring that there will be no delay on the day of the test.

B. Other Sources of Technical Error.

Anyone with practical experience of the test must know that, when the results of the report may be so far-reaching, it is not wise or fair to place absolute reliance on one result, because the nature of the test is such that the possibilities of human error are by no means negligible. But apart from such mistakes, and when a result is confirmed by a second test, it is probably one of the most certain things in medicine.

To compare a new antigen with the one in use, and to confirm an unexpected result, we have repeated the test or put the sera up in duplicate very many times. In a consecutive batch of 140 such readings which we studied at the time the readings were unchanged in 114. There were ten where partial readings were changed by becoming stronger after a provocative injection of "606"; these were taken as correct. Among the remainder there were some changes from doubtful and practically negative to negative, and a few cases where a partial positive result immediately after the last injection of a course became negative a week or two later. Three cases which might have been reported as positive were corrected to negative, and were explained by absorption of complement by extract; these, of course, were corrected before they were sent to the clinician. One case of typical soft sore reported positive was proved negative four days later. This last is the only definite error in the series.

At other times there have occasionally been such errors equally inexplicable from a pathological point of view, but in our opinion undoubtedly due to human element.

We have interchanged the readings once between two patients, the clinician accepting the second, when the bloods were not taken in the laboratory and came in a batch of six. We have received blood sera by post unlabelled occasionally, and a batch of several may be mixed before it reaches us, and equally easily a similar mistake may be made by the pathologists or assistants; or even a clerical error cannot be traced when the day's results have been thrown away. We have put down the small number of altered readings to such mistakes, or to a mistake in dividing out the sera during the test. It may seem that this point is rather elaborated, but one has seen letters in the journals which presume to criticise the whole test on one mistaken reading.

It is generally accepted in medicine that there should be a close association between the clinician and the pathologist. We would emphasise the point that in the Wassermann test this association must be something really practical; for with the test reagents standardised and tested one against the other the final decision that they are efficient is that syphilitic sera give positive results, and non-syphilitic negative.

We have not attempted any elaborate grading of the exact strength of positive and partial reactions, but we have satisfied ourselves that syphilitic serum gives a positive result, and non-syphilitic serum a negative, in such an overwhelming majority of cases that any apparent exceptions must be very closely studied before they are accepted.

The reliability of our results has been due in no small measure to the careful work in the laboratory of Sergeant Atkinson and Corporal Bates.

References.—1. White: Brit. Med. Jour., October, 1917. 2. Research Committee's Report, Wassermann Test, March, 1918. 3. Ibid., Fildes and McIntosh.

DONATIONS AND BEQUESTS.—Lady Markham, president of the Mansfield and District Hospital, has given £1000 for the endowment of a bed in memory of her late husband, Sir Arthur Markham, M.P. for Mansfield.

ROYAL SUSSEX COUNTY HOSPITAL.—"Pound Day," together with contributions from the county, realised £662 19s. 11d. in money and £175 in kind. The expenses were £72 6s. 7d., or 8½ per cent. of the total amount. The annual exhibition of the Blanket, Linen, and Work Guild was held on March 20th in the Ralli memorial theatre at the hospital. Miss Blanche Fair started the guild in 1912, its object being to supply household linen, blankets, ward clothing, &c., for the hospital and convalescent home. Its success can be gauged by the fact that year after year it meets the calls of the institution without any charge upon the hospital. There were only 196 beds in 1912, against 265 at the present time, but the financial support to the guild has not been commensurate with the growth of the calls upon it, and every effort is being made to raise the income to £350 a year.

COLLOID ANTIMONY SULPHIDE
INTRAVENOUSLY IN KALA-AZAR,

WITH A NOTE ON ANTIMONY OXIDE ORALLY.

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IN a previous paper¹ I drew attention to the occasional danger from the toxicity of tartar emetic intravenously in the doses necessary for the cure of kala-azar, and have recommended sodium antimony tartrate, Plimmer's salt, as being slightly less toxic and at least equally efficient as the potassium salt. Since that paper was published I have met with serious symptoms and death in one instance following the use of the sodium salt, but found that the sterilised solution in a small flask plugged with cotton-wool had become contaminated with micro-organisms in the hands of an assistant surgeon who gave the injections. It is noteworthy that both this and the accident I previously reported occurred in the damp, hot, rainy season in Bengal, when fungi often grow through cotton-wool plugs. I now either only use freshly sterilised solutions, as advised by Dr. E. Muir, or add $\frac{1}{2}$ per cent. carbolic acid to the solutions. Doses put up in sterile ampoules by reliable chemists can also be safely used as long as they remain perfectly clear in doses up to 5 c.cm. of a 2 per cent. or 10 c.cm. of a 1 per cent. solution.

During the last six months I have been trying intravenous injections of solutions of colloidal antimony sulphide, very kindly prepared for me by Mr. F. L. Usher, B.Sc., at the Central College, Bangalore, at the suggestion of Dr. J. L. Simonsen, to both of whom I am greatly indebted for their invaluable help in the matter. Mr. Usher has kindly supplied me with the following account of his method of preparing the new drug, while he will record further details of his researches.

Preparation of Colloid Antimony Sulphide in 1 in 500 Solution.

"A solution of tartar emetic, strength 1 in 200, is saturated with sulphuretted hydrogen which has been well washed so as to deprive it of acid spray. The originally colourless liquid becomes deep red, but does not throw down any precipitate. The solution thus obtained is one of colloidal antimony sulphide, mixed, however, with potassium bitartrate, which has next to be removed. This is done by dialysing against distilled water at a temperature of 80° to 100°, preferably through a membrane of goldbeater's skin, in default of which parchment paper may be used. The length of time required for this operation depends on several factors, and its progress is best followed by measuring the electrical resistance of the solution from time to time. When it has reached 10,000 ohms the dialysis may be stopped. The liquid is then tested by titration with a standard solution of iodine in the presence of a little sodium bicarbonate, and its strength being thus determined, the amount of dilution required to bring it to a strength of 1 in 500 can be calculated. There are still three substances to be added—namely, glucose to make the solution isotonic with blood (salt cannot be used for this purpose, since it would cause precipitation), gum arabic to render it more stable, and phenol to preserve it. The final solution should contain 5 per cent. glucose, and 0.5 per cent. each of gum and phenol, so the calculated amounts of these are dissolved in water and added to the solution, which is finally made up to the required volume with distilled water, and is then ready for use. The two most important points to bear in mind are (1) that only distilled water must be used throughout (tap water would sooner or later cause precipitation); and (2) that the titration of the liquid with standard iodine must be done after dialysis and before the addition of glucose, gum, and phenol. The solution when properly made keeps well and may be boiled in order to sterilise it."

Mr. Usher also sent me some 1 in 250 solution, but it was of a dark red colour, making it more difficult to see when blood had entered the syringe when giving an intravenous injection. It is also more difficult to prepare and less stable, so, as experience showed that sufficient doses to be effective of the 1 in 500 solution could conveniently be injected intravenously, the latter strength has been used in all but a few of the injections. In calculating the quantities given in the cases shown in Table II., 1 c.cm. of the

1 in 250 solution has been counted as 2 c.cm. of 1 in 500, as both solutions will be so rapidly diluted when injected slowly into the blood stream that their action will be similar on the parasites of kala-azar. The carbollised solution keeps well and remained sterile in flasks after use for several weeks in the rainy season.

Toxicity in animals.—The toxicity of the solutions of colloidal antimony sulphide is remarkably low as compared with tartar emetic and sodium antimony tartrate, as shown in Table I. :—

TABLE I.—*Toxicity in Pigeons of Antimony Solutions Intravenously.*

| Preparation. | Recovered. | Died. |
|---|------------|-----------|
| Tartar emetic | 0.015 g. | 0.0175 g. |
| Sodium antimony tartrate | 0.02 g. | 0.0225 g. |
| Equivalent of colloidal antimony sulphide ... | 0.16 g. | ? |

Grammes per kilo.

Mr. Usher informs me that the colloidal antimony sulphide contains twice as much antimony as the soluble tartrates, allowance for which has been made in Table I. No less than 20 c.cm. per kilo of the 1 in 250 colloidal antimony sulphide solution (equivalent in antimony to a 1 in 125 solution of tartar emetic) was injected intravenously in a pigeon of 270 g., or 5.4 c.cm. of the 1 in 250 solution, without any toxic symptoms arising. Beyond this I did not go owing to the technical difficulties of injecting such large amounts and the toxicity of the $\frac{1}{2}$ per cent. carbolic acid the solution contains, while it is clear from the above figures that the sub-minimal lethal dose of the colloidal antimony sulphide is not less than about 10 times as high as that of tartar emetic, and not less than eight times as great as that of sodium antimony tartrate—a matter of the greatest practical importance. The solution of colloidal antimony sulphide is therefore very much less toxic than those of the soluble antimony salts hitherto used in the treatment of kala-azar² and sleeping sickness.

Toxicity in man.—Up to 20 c.cm. doses of the first solution of slightly weaker than 1 in 500 and up to 9 c.cm. of the 1 in 250 solution have been repeatedly given intravenously without the least toxic effect and with excellent results in kala-azar. A later supply of a 1 in 500 solution, however, has sometimes produced pain in the loins and flushing of the face of a few minutes' duration, although 2 c.cm. of the same solution from the same flask produced no visible signs in a rabbit when injected intravenously, so these symptoms are evidently not dangerous as is the collapse sometimes following the use of soluble antimony tartrates. In one patient, with an enormous spleen extending six inches beyond the navel, the above symptoms were followed by drowsiness and, later, excitement after a $8\frac{1}{2}$ c.cm. dose.

TABLE II.—*Colloid Antimony Sulphide Intravenously in Kala-Azar.*

| No. of case. | Age. | Duration in months. | Days in hospital. | Days of fever. | Cm. of drug to cessation of fever. | Total in cgs. | Max. dose in c.cm. of 1 in 500 solution. | Spleen below ribs in inches. | Diminution of spleen in inches. | Weight in lbs. on admission. | Gain in weight in lbs. | Parasite in spleen blood before treatment. | Result. |
|--------------|------|---------------------|-------------------|----------------|------------------------------------|---------------|--|------------------------------|---------------------------------|------------------------------|------------------------|--|---------|
| 1 | 15 | 3 $\frac{1}{2}$ | 104 | 16 | 7.2 | 25.1 | 10 | 3 $\frac{1}{2}$ | -2 | 65 $\frac{1}{2}$ | +22 $\frac{1}{2}$ | + | Cured. |
| 2 | 16 | 12 | 106 | 10 | 5.0 | 25.6 | 10 | 5 $\frac{1}{2}$ | -1 $\frac{1}{2}$ | 67 $\frac{1}{2}$ | +15 $\frac{1}{2}$ | + | |
| 3 | 18 | 24 | 82 | 3 | 3.0 | 33.3 | 15 | 5 $\frac{1}{2}$ | -3 | 75 | +18 $\frac{1}{2}$ | + | |
| 4 | 30 | 7 | 74 | 12 | 10.4 | 37.4 | 20 | 6 | -4 $\frac{1}{2}$ | 98 $\frac{1}{2}$ | +14 $\frac{1}{2}$ | + | |
| 5 | 30 | 8 | 37 | 9 | 10.0 | 18.0 | 20 | 4 | -2 $\frac{1}{2}$ | 78 $\frac{1}{2}$ | +11 $\frac{1}{2}$ | + | |
| 6 | 20 | 4 | 52 | — | — | 22.0 | 10 | 4 | -2 | 81 $\frac{1}{2}$ | +14 $\frac{1}{2}$ | + | |
| 7 | 12 | 2 $\frac{1}{2}$ | 62 | 16 | 4.6 | 8.0 | 5 | 4 | -1 $\frac{1}{2}$ | 56 | +12 | + | |
| 8 | 22 | 6 | 99 | 14 | 6.1 | 14.0 | 9 | 7 | -2 | 96 | +20 | + | |
| 9 | 27 | 6 | 84 | 25 | 6.6 | 15.1 | 8 | 4 $\frac{1}{2}$ | -1 | 91 | +12 | + | |
| 10 | 44 | 24 | 60 | 20 | 6.3 | 9.7 | 9 | 4 $\frac{1}{2}$ | -4 | 98 | +7 | + | |

although the same dose a week previously had no ill-effect; so this patient appears to have developed an intolerance to the drug. Possibly these symptoms may be due to the slow precipitation of the antimony sulphide, due to contact with the chlorides in the blood, and a slightly weaker solution such as 1 in 750 to 1 in 1000 might be preferable, but I have not yet been able to test this. With the single exception

¹ Ind. Med. Gaz., May, 1918.² THE LANCET, 1916, ii., 782.

recorded above the unpleasant symptoms have been quite slight and transitory, but require further study in order to eliminate them, as they restrict the use of large and more rapidly efficient doses.

Clinical Trials in Kala-Azar.

Clinically, the use of colloid antimony sulphide in kala-azar has been very satisfactory, apart from the one case with prolonged toxic symptoms already noted, who is still in hospital although he has improved considerably. Table II. shows the main points of all the cases thus treated who have been discharged from hospital, drawn up on similar lines to those illustrating the use of tartar emetic and sodium antimony tartrate respectively in my previous papers,^{1,2} while the average figures relating to the most important points of all three series are shown in Table III. for convenience of comparison. The most noteworthy features are the following.

TABLE III.—Comparison of Average Data of Treatment of Kala-azar with Tartar Emetic, Sodium Antimony Tartrate, and Colloid Antimony Sulphide.

| | Tartar emetic. | Sodium antimony tartrate. | Colloid antimony sulphide. |
|------------------------------------|----------------|---------------------------|----------------------------|
| Days in hospital | 62.4 days. | 73.6 days. | 76 days. |
| Days fever under treatment ... | 28.2 " | 21.2 " | 13.9 " |
| Cgs. of drug to cessation of fever | 103 cg. | 54 cg. | 6.6 cg. |
| Total drug in cgs. | 155 " | 160 " | 20.8 " |
| Decrease in spleen in inches ... | 2.5 in. | 2.2 in. | 2.4 in. |
| Increase in weight in lbs. | 7 lb. | 8 lb. | 14.8 lb. |
| Max. dose of 2 per cent. solution | 5.9 c.cm. | 5.7 c.cm. | 2 c.cm.* |

* 20 c.cm. of a 1 in 500 solution equal to 2 c.cm. of a 2 per cent. solution.

Temperature reactions are much less frequent and severe after intravenous injections of the colloid preparation than after the soluble tartrates, and are commonly absent altogether after the first few injections, indicating less toxicity, although also probably partly due to the smaller amount of antimony injected. No such toxic symptoms as sickness, nausea, and collapse were seen, although they are often present after tartar emetic injections.

Gain in weight.—The most striking clinical feature was the much more rapid gain in weight under the colloid antimony sulphide treatment than with the antimony tartrates previously used. This is illustrated by the figures in Table III., showing an average gain in weight of 14½ lb. in approximately the same average time in hospital, against 7 and 8 lb. respectively under the tartar emetic and sodium antimony tartrate, or nearly double the amount. This is also probably largely due to the slight toxicity of the colloid preparation.

Diminution in size of spleen.—This was approximately the same under all three forms of treatment, the average figures only varying between 2.2 and 2.5 inches. In the earlier colloid cases in the first part of Table II., treated with the largest doses before any toxic symptoms had been met with, the reduction in the size of the spleen was greater than in the later cases on smaller doses.

Quantity of antimony administered.—Still more striking is the total quantity of the different antimony preparations required to bring about cessation of the fever and to produce recovery, as indicated by the absence of fever for a considerable time, accompanied by steady gain in weight and diminution in the size of the spleen, which long experience has shown usually results in permanent cure. It appears from Table III. that the total average amount of tartar emetic and sodium antimony tartrate used per case was respectively 155 and 160 cg., while of colloid antimony sulphide the average was 20.8 cg., equivalent to 41.6 g. of the tartrates, but still only containing approximately one-fourth the amount of antimony in the latter salts. When the greatly lesser toxicity and much more rapid gain in weight are also taken into account, the marked superiority of colloid antimony sulphide over tartar emetic and sodium antimony tartrate in the treatment of the formerly deadly kala-azar is very evident.

Slower renal excretion of colloid antimony sulphide.—Dr. Satendra Nath Sen, assistant chemical examiner to the Government of Bengal, has very kindly carried out a

number of observations on the presence of antimony in the urine after the intravenous administration of the three solutions I have used in kala-azar with interesting results. When the soluble antimony tartrates are injected intravenously, even in small doses, rapid excretion takes place in the urine, especially during the first two days. With the 1 in 500 colloid antimony sulphide no antimony showed in the urine during the three days following the intravenous injection of 5 c.cm. doses and only traces after 15 c.cm. On injecting 20 c.cm. a well-marked re-deposit on copper was obtained during the first two days and traces on the third day. These data indicate that the colloidal antimony sulphide is retained in the blood longer than the soluble tartrates of antimony, as might be expected on theoretical grounds, and would thus presumably act longer on the kala-azar parasites, and so be effective in smaller doses, as I have shown to be the case.

Conclusion.—1. Colloid antimony sulphide therefore appears to be a distinct advance on soluble antimony tartrates in the treatment of kala-azar.

2. It would also be well worth trying in sleeping sickness.

Antimony Oxide Orally in Kala-azar in Young Children.

The great drawback to the intravenous injections is the difficulty of giving them in young children. Several years ago I reported³ good effects in kala-azar in children from the daily inunction of 5 per cent. finely divided metallic antimony in lanoline, although they are far inferior to intravenous injections when the latter are practicable. I also reported a trial of Martindale's solution of antimony oxide in glycerine hypodermically, but with very disappointing results. Recently I have tried if adults with kala-azar would stand hypodermic and intramuscular injections of sodium antimony tartrate with the addition of urethane to lessen the pain, but although the pain was reduced and no sloughing or abscess formation occurred (as happens after tartar emetic subcutaneously), and analyses of the urine showed that the drug was absorbed as it was excreted by the kidneys, yet the still painful injections could not be continued long enough to obtain material benefit.

Recently I have tried another and simpler method of administering antimony in kala-azar based on the fact that antimony oxide is soluble in weak hydrochloric acid, and found that when this compound is given with food it is absorbed and excreted through the kidneys, Dr. Satendra Nath Sen having kindly made analyses of the urine for me. I was also able to give much larger doses than I had anticipated without causing nausea or vomiting by administering the drug in 1 gr. and ½ gr. pills, beginning with 1 gr. three times a day and increasing each dose by ½ gr. every third day as long as it was well tolerated. By this means I worked up the daily quantity taken to 15 gr. in an adult and to 6 gr. and 7½ gr. respectively in two boys of 11 and 12 years old. The results, however, were disappointing, for in the adult patient the spleen puncture was again positive after seven weeks, and the spleen half an inch larger, although he subsequently did very well on colloid antimony sulphide. In the boy of 12 the fever and the disease steadily progressed, although in his case also it yielded rapidly to the colloid injections, and in the other boy spleen puncture also remained positive, although he gained 4 lb. in weight. In patients of these ages the treatment by itself therefore failed.

As I had no opportunities of trying antimony oxide in quite young children I sent some to Dr. Dodds Price, in Assam, who has kindly given it in addition to 5 per cent. metallic antimony inunctions over the abdomen every other day in 12 children, selected on account of the difficulty of treating them intravenously, and has kindly sent me the following report: "One case died, two are hanging fire, and nine are either cured or have lost their fever and are greatly improved." He adds that the doctor babu, in whose care the cases are, is convinced that the antimony oxide, in pill form, combined with inunctions, is a great advance on the older methods of treatment, of which he had had a former experience of some hundreds of cases. Considering how deadly kala-azar is in young children the above record is a very encouraging one.

This plan would appear to be worth trying in infantile kala-azar of the Mediterranean littoral.

³ Brit. Med. Jour., Feb. 26th, 1916.

RECENT RETROGRESSIONS IN THE TREATMENT OF FRACTURES.

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THE very appreciative letters in THE LANCET bearing on my work on fractures have been read by me with interest, and I hope the eminent surgeons who have so complimented me will accept the expression of my extreme gratitude for pointing out that my efforts have appealed to them in a favourable light.

Whilst we have all been able to note considerable advances during the war in fractures treated by British, French, and American surgeons, I for one have been, until recently, quite in the dark as to the methods and results of German surgeons in this branch of surgery.

Since my return from France I have received notes from my colleague, Captain H. D. H. Willis-Bund, R.A.M.C., at No. 8 Stationary Hospital, giving the particulars embodied in this article of the German treatment of British prisoners of war with fractured femurs. The advent of the armistice and the consequent repatriation of prisoners of war have given us an insight into the appalling methods used and the terrible results obtained by some at any rate of the German surgeons.

Primitive German Methods of Treating Fractures.

"At No. 8 Stationary Hospital during December, 1918, and the early part of January, 1919, 41 repatriated prisoners with fractured femurs have been admitted. The truly shocking results obtained and the primitive methods employed have seemed of sufficient interest to put on record.

None of the patients had any notes giving detail of treatment or progress of case during captivity. I have not been able to identify the names of any of the surgeons responsible, though one officer states that he was under the care of a professor who seemed to be treated with the respect due to an eminent surgeon.

I have no facts at my disposal to show the German results and mode of treatment of their own wounded, but interrogation of these prisoners, both officers and men, convinces me that on the whole they were kindly treated, that the lack of food which often obtained was not the fault of the surgeons, and that in many cases they tried to the limit of their ability to get the patients better.

As evidence of the fact that the surgeon took interest in, and trouble in treating, the patient, the officer mentioned above, who was wounded in March, 1918, states that the professor five times re-fractured his leg and set it again.

The guiding principles for treatment would seem to have been lack of extension and indefinitely prolonged immobilisation.

The majority of the cases were treated on a trough-like metal back-splint with foot-piece, the splint being of the same length in every case. It was the wounded man's misfortune if he received no posterior support to his fracture, and due entirely to the fact that he had been so misguided as to incur a fracture at a higher level on his thigh than the splint would reach to.

Apparently the continuation of hostilities was sufficient indication to persevere with this immobilisation of the limb without extension, as the patients wounded in March were, when released, still in the same state of splinting as those whose legs were broken in October.

One enthusiast apparently tried an original method of extension on some of the cases. A sharp-pointed rigid metal hook, shaped somewhat like a note of interrogation, was put into the anterior surface of the tibia, with its straight unpointed end lying in the long axis of the bone and directed towards the foot. Another of these hooks was passed in the opposite direction through the anterior superior spine of the ilium. A rope working over a pulley with a brick at the end was attached to each hook to establish the extension.

A patient treated in this manner stated that every time his posterior wounds were dressed the weights were removed and he then noticed grating of the bones and shortening of the limb.

It was unfortunate that it did not occur to the genius who evolved this form of torture that if he had raised the foot of

the bed after applying the hook in the tibia the body weight would have obviated the necessity of using the hook in the anterior superior spine. Had this been done the life of one patient at any rate might possibly have been saved.

In this case, as far as could be gathered from the account of another patient in a neighbouring bed, the hook in the anterior superior spine tore out, and death occurred some days later from peritonitis.

Some typical X ray photographs are appended.

Fig. 1 shows very marked abduction of the upper fragment in a fracture at the junction of the upper and middle thirds of the thigh. There is union with very marked angulation at the site of fracture and consequent shortening of 16 centimetres. The upper end of the lower fragment is through the skin of the external surface of the thigh.

Figs. 2 and 3 are the antero-posterior and lateral views of a patient who in March, 1918, sustained a compound fracture of the middle of the shaft of his right femur. The bones are overlapping each other and the limb is 17 centimetres short. The knee is absolutely stiff and there is



FIG. 1.—Antero-posterior view.

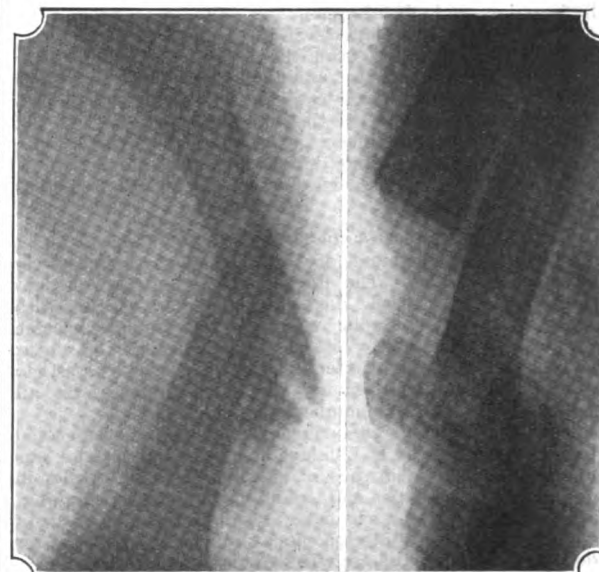


FIG. 2.—Antero-posterior view.

FIG. 3.—Lateral view.

apparently fibrous organisation between the two pieces of bone, as the limb is quite flail in the middle of the thigh."

I think that these photographs justify the title of this article. Every fractured-femur patient fortunate enough to fall into the hands of Allied or American surgeons has more to be thankful for than he is probably aware of.

THE TREATMENT OF GONORRHOEA BY PUS VACCINES.

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DURING the last two years we have been dealing with large numbers of cases of V.D.G. among soldiers of the Expeditionary Force. All recognised methods of treatment have been tried extensively, generally against control cases, provided they could be partially carried out by the patient under close supervision. If the whole treatment could be carried out by the medical officer personally much better results would doubtless be obtained.

The general routine treatment of uncomplicated V.D.G. cases was based on that so successfully inaugurated by Colonel L. W. Harrison, A.M.S., in 1914-15, slightly modified. Irrigation of the urethra with 1 in 8000 or 1 in 4000 pot. permanganate for the first two days of only the anterior urethra, and then irrigation into the bladder of the same dilutions. During this initial irrigation the urine is closely examined; on signs that the posterior urethra has become attacked, through-and-through irrigation into the bladder is immediately started.

Standard of Cure.

In fixing a "standard of cure" we had to bear in mind the importance to get men back to the fighting line. The standard of cure we set ourselves was as follows: (a) The man should show no signs of urethral discharge after thoroughly stripping the urethra at examination early in the morning and after urine held for three hours. (b) The urine, passed into two glasses, must be entirely free of shreds or filaments. (c) Freedom from all signs of complications. (d) Morning smear negative to G.C. If he passed this test he was taken off all treatment, given physical drill, placed on heavy fatigues, and again put through the above test. If again no sign of disease he was sent to duty.

Out of some 2700 cases discharged to duty on this standard only 9 "were known" to have relapses (one twice), showing a "known average" of about 0.3 per cent. It is believed that the majority of readmissions into hospital of these men were known. The laboratory proved of little assistance in deciding on cure. For smears taken from an apparently dry urethra (even if taken at reveille before passing urine), smears from the prostate secretion after massage, and attempts to obtain cultures from centrifuged deposit of urine in such cases almost invariably proved negative. Where positive the man was regarded as not cured, in spite of all other negative evidence. The absence of gonococci in a definite deposit of shreds in the urine, even on two or three occasions, was not of itself regarded as proof of a cure.

Treatment with Gonorrhoeal Pus Vaccine.

The vaccine treatment of V.D.G. has been extensively used by one of us. The Rochester Row stock exogenous vaccine has been tried, Havre vaccine (gon. vaccine with some addition of staph. vaccine), the French vaccine "Dnègon," prepared by Messieurs Nichol and Blazot at Tunis, and, to limited extent, autogenous vaccines. Many gave fair results, particularly in rheumatic cases, yet all failed in a considerable number of cases.

The idea of making gonorrhoeal pus vaccine was suggested to us by Captain J. L. Lickley, R.A.M.C., and a trial was made of one from the pus of five cases. The results in gonorrhoeal rheumatism and epididymitis were encouraging, and a vaccine was next made from 21 acute cases; in each a preliminary microscopic examination was done for density and purity of growth. About 1 c.cm. of pus was pipetted from the urethra of each case and mixed with 10 c.cm. of 0.5 per cent. carbolic normal saline in a sterile test-tube. The 21 emulsions were transferred to a 500 c.cm. flask and well shaken. Glacial acetic acid in the proportion of 0.5 per cent. solution was added to dissolve the pus cells, a rubber cap put on and the whole shaken well for one hour. Emulsion then diluted by equal part of 0.5 per cent. carbolic normal saline, making acetic acid 0.25 per cent.,

and put aside for four days to allow carbolic to kill off gonococci. The emulsion, counted against blood cells, was found to contain approximately 600 million per c.cm. It was tested aerobically and anaerobically for sterility, and finally diluted with 0.5 per cent. carbolic normal saline and put up in 50 c.cm. vaccine bottles—giving a dose of 24 millions per c.cm.

The advantages claimed are: 1. Ease and simplicity of manufacture. 2. High degree of polyvalency. The cases selected were infected in England, Scotland, Ireland, and France—in places as widely apart as Aberdeen, Belfast, Bristol, Hull, London, Paris, and Poperinghe. Torrey¹ has shown by cross-agglutination and agglutinin absorption experiments that gonococci fall into about 14 groups. 3. The high degree of virulence. The organisms have not been vitiated by growing on artificial media, but are fresh and virulent.

For chronic cases this vaccine was combined with emulsion of ten strains of Gram-positive diphtheroid bacilli and of seven strains of *Staph. albus* isolated from chronic cases. The minimum doses of these were 60 million and 240 million respectively. The vaccine, plus diphtheroids, seemed to be more efficacious than G.C. alone in gleets.

We were struck all through by the almost entire absence of the so-called "negative phase," even though doses were given every three days. Possibly the gonococci were to some extent sensitised in the body before discharge.

Results of Experience.

Whilst recognising that other workers have not always had similar results, we report the following as the chief points of experience gained:—

(a) Nothing is gained, and possible harm done, by giving vaccines in the acute stage, except where the infection has become generalised—viz., in V.D.G. multiple arthritis, endocarditis, pericarditis, &c.

(b) That the vaccine treatment of V.D.G. differs from other diseases in the possible production of a prolonged negative stage if too large a dose is given. The avoidance of this prolonged negative phase is the key to the successful use of a vaccine in V.D.G. cases, in our opinion. If the negative stage develops it is generally several weeks, sometimes months, before improvement is brought about. The indications of over-dosage are: 1. Local—increased urethral discharge with increase of pus cells. Increase of extra-cellular gonococci not due to a breakdown of purulent folliculitis. 2. General—increased evening temperature (any temperature over 99° F. should be regarded as dangerous), malaise, headache, &c. An evening temperature even of 99° for more than one night should be regarded as an indication of an overdose. Of these two indications the local we regard as the more serious.

To avoid these dangerous effects it is necessary to commence with very small doses, very gradually increasing doses. The doses mentioned below are much smaller than those used by many other workers—and also smaller than we formerly used—but experience of several thousands of cases treated with vaccines, in acute or chronic stage, has convinced us that these doses give the best results with the least number of relapses. Possibly the use of sensitised vaccines would obviate the dangerous "negative phase."

Types of Cases Benefited.

The type of cases most benefited by vaccines are: (a) Chronic gleet stage coming on about 20 to 25 days after commencement of discharge, with gonococci, intra-cellular and extra-cellular, in the discharge; (b) relapses generally stirred into activity by recent and repeated sexual connections, with drinking bouts; (c) cases of V.D.G. rheumatism in acute or chronic stage; (d) gonorrhoeal ophthalmia, either metastatic or local infection type; (e) the rare cases of gonorrhoeal septicæmia.

The necessity of transferring men from one unit to another after acute stage, so as to be suitably employed, has interfered with keeping complete statistics as to the final results of any particular treatment, but as far as could be traced our results were as follows:—

(a) *Chronic gleet*.—Twenty-five cases were previously treated unsuccessfully for an average of 106 days before being put on this particular vaccine. Of these, 21 were cured

¹ Torrey: Journal of Medical Research, Nov., 1907, xvi., 329. Teague and Torrey: Journal of Medical Research, Dec., 1907, xvii., 223.

on an average of 31 days' further treatment, or 84 per cent. Four transferred elsewhere after an average of 27 days' vaccine treatment.

(b) *Relapses*.—Forty-five were treated with vaccine. These cases had relapsed after an average period of 16 months following previous treatment. They had been under treatment prior to starting the vaccine course on an average 30 days. At the end of 23 days' further treatment 23, or 51 per cent., were cured, and 22 had been transferred elsewhere. These cases were all of the most obstinate type who had failed to be cured after many other methods had been used.

(c) *Multiple acute arthritis*.—Eight severe cases were treated. Four of these were cured and sent back to duty, two were transferred elsewhere (one on the third day improved and temperature normal, one on the tenth day much improved), and two still under treatment with chronic vesiculitis, but rheumatism cured.

It has been suggested that the above-mentioned method is liable to inoculate the patient with other bodies besides active gonococcal antigen, such as spores, &c., or even active organisms not destroyed in the preparation of the vaccine.

The method is not entirely new (it has been tentatively tried by several workers without untoward results), but as far as we are aware it has never been tried systematically as above. The cases were kept under close observation whilst being treated, temperatures taken twice daily, and the men seen daily by the medical officer.

About 3000 doses have altogether been given of this vaccine by us—five cases had rises of temperature, about 99°, on the evening following injection, one on three occasions. All the cases had normal temperatures next morning and remained so. All injections were given into the muscles of the arm or forearm (not subcutaneously). There was no pain and no local inflammation. All injections were given with usual aseptic precautions.

Dosage.

The scheme of dosage most satisfactory was as follows: 6 million, 12 million, 18 million, 24 million, 36 million, 60 million, 72 million, 90 million, 120 million, and 150 million doses given at three-days' interval. If a rise of temperature occurred after any dose that dose was repeated on the next occasion, and, in one or two cases, one dose lower in the scale. Most patients were cured by the time they reached the 60 to 72 million doses. The most obstinate were cases of relapse after a long interval from their previous treatment. The majority of these were admitted with chronic gleet, with a few fine shreds in their urine. They show, according to our figures, a high resistance to any vaccine. We are unable to show control cases of other vaccines, but in our hands this vaccine has given incomparably better results than any previously used by us.

A COMPARATIVE NOTE ON FITNESS AND UNFITNESS IN CONVALESCENCE.

BY BASIL PARSONS-SMITH, M.D. LOND.,
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OF the several phases of an incapacitating illness the convalescent stage demands and amply repays the utmost care and precision on the part of the clinician. During this period one takes careful stock of the patient's several resources according to the face value they present, and their interpretation as deduced from experience; the opinion arrived at needs to be well judged at all times, more especially so, for obvious reasons, in the practice of military medicine; this latter admits only of certainties; from the Army point of view two main classes only are recognised—viz., the "fit" and the "unfit." During convalescence an opportunity arises for the study of the indications and signs which characterise the merging of these two great classes. Apart from special cases the difference between the civil and the military convalescent is not great. In both we recognise a depression in general vitality, lowered functional activity, and visceral derangement in varying degrees. The circulatory mechanism is involved, and well-marked signs and symptoms justify particular attention to the cardiac functions.

"Soldier's Heart."

By the strain of modern warfare on the heart and vessels latent disease is disclosed, while so-called functional and neurotic conditions appear. It is to these latter types that attention is mainly directed in the present communication, together constituting the greatest proportion of known varieties of "soldier's heart." The symptom-complex is extensive, and includes a series of phenomena significant of nervous and circulatory debility, associated with lack of reserve energy. So persistent are the nervous symptoms and so obscure the pathology that one is disposed to regard the condition as one of the types of the war neuroses.

The nervous element appears to involve the entire system. Most patients complain of palpitation both at exercise and when resting. An exaggerated sympathetic control seems the more likely factor. The symptoms indicate a definite nervous element, but it is well to examine the circulatory manifestations. Taken collectively these may be interpreted as an expression of rebellion on the part of the circulatory mechanism, which is for the time being below par; symptoms of fatigue and exhaustion are incited prematurely, the patient tends to dwell unduly upon these symptoms and to multiply them far in excess of the actual physical signs. To gain the patient's confidence one must listen attentively to all he may say, and perform a thorough and accurate physical examination. The details of the latter should be noted so as to estimate the result of treatment; this cannot be too strongly insisted upon.

Examination of Heart: Physical Signs.

The writer's aim is to record briefly a comparison between the states of a healthy fit man and one whose cardiac mechanism has suffered on active service. Certain features call for mention: the rate of heart beat, the pulse-respiration ratio and its variation with test exercises should be observed in each case. The object is to estimate the heart's mechanical value and to recognise any signs indicative of definite trouble. For instance, abnormalities or eccentricities of the apex beat, excessive diffusion, tenderness to percussion and palpation evidenced by involuntary flinching, deficient mobility with change of position, systolic retractions and other evidences of right ventricular preponderance; also such a combination as a vigorous apex beat with a feeble and easily compressible pulse. The sounds, especially at the apex, must be examined as to purity and relative values and one should endeavour to recognise the return not only of healthy tone and quality, but also the restoration of the values of the first and second sounds. One has only to consider the clinical picture in the early stage of one of the functional cardiac neuroses to appreciate the foregoing remarks. The expression is anxious and restless, involuntary movements are frequently noted, the heart's action is accelerated, diastole is cut short, the sounds are accentuated, high pitched and valvular, vaso-motor irritability is evident, dyspnoea, and excessive perspiration. Murmurs, both exocardial and endocardial, are frequently present; the latter belong typically to the so-called fluid vein variety rather than that which owes its origin to the vibration of valve curtains.

The murmurs which are noticed to appear most frequently are the following:—1. The cardio-respiratory bruit, usually best heard at the apex, varying with (but at times apparently independent of) the respiratory phases, and always systolic in time. 2. The systolic bruit at the pulmonary area possibly due to loss of tone and dilatation of the conus of the right ventricle. 3. The systolic bruit which appears at the apex after exertion and is inaudible at rest, indicative possibly of temporary valvular incompetence during exercise. (The complete absence of diastolic murmurs is important; they never appear in D.A.H. cases.) Such murmurs, however, in themselves are quite insignificant; the general state and prognosis will be arrived at and decided by an inquiry into the exercise tolerance, the presence or absence of early enlargement, persistent tachycardia, and hypertension.

Exercise Tests.—Blood Pressure.

One does not tend nowadays to dwell solely upon the physical signs, but rather to make inquiry into the heart's behaviour during and after exertion. Frequent observations are necessary, both detailed and general. One watches the patient's condition to determine his capacity for work, testing his physical state both before and after definitely prescribed exercises, as marches. A knowledge is also

needed of the effort response of healthy controls and an idea of the duties the patient may later perform. It is our business to correlate these facts. Broadly defined, fitness for duty entails a capacity to perform exercise without undue evidence of fatigue, palpitation, breathlessness, giddiness, &c. Doubtful cases will occur, obscure symptoms will need verification, and blood examinations, hæmoglobin percentage, viscosity, or cell counts may be called for. In general tracings, polygraphic and electro-cardiographic, are not helpful, but the manometric readings are of great service.

The blood-pressure variations in the fit and healthy are nowadays clearly recognised, similarly, too, the range of reflex adaptability of the heart and vessels. These self-regulating qualities are mainly concerned with the varying adjustments in arterial output, contractile force, rate, rhythm, and blood pressure. Effort of any kind reacts upon the vascular mechanism in a perfectly definite fashion; the rate of heart beat is increased and, partly by reason of this, partly owing to the diminution in area of the venous channels by the contracted state of the muscles, the venous inflow is increased; now we know that the arterial output is governed by the venous input, and that, with a constant inflow, the output tends to remain unaltered in spite of changes in heart rate or blood pressure; exercise, however, increases the venous inflow, and the heart muscle responds by contracting more vigorously, at the same time raising directly the arterial output and pressure—by so doing making provision for the higher standard of nutrition which must be realised if effort is to be satisfactorily maintained. This compensatory power of the heart muscle is sufficient in the fit and healthy to cope with all ordinary demands, but it has its limitations. The muscle fibres possess an optimum of distension and a maximum. If the latter be exceeded by excessive venous inflow compensation fails and dilatation ensues. We are able to estimate with some accuracy the cardiac compensatory power. Manometric readings furnish definite facts. Both diastolic and systolic pressure need to be recorded. The difference between the two (the pulse pressure) indicates the actual driving power.

Results of Exercise in Fit and Unfit.

The accompanying table is prepared from an analysis of the charts of 20 patients and 20 controls. In the table are set out the more salient details which assist us to dis-

| | Patients. | | | Controls. | | |
|---------------------------------|-----------|------|------|-----------|------|------|
| | Av. | Max. | Min. | Av. | Max. | Min. |
| Age | 24 | 31 | 19 | 27 | 31 | 24 |
| Subject resting— | | | | | | |
| Heart rate | 116 | 140 | 80 | 89 | 100 | 76 |
| Respiration rate | 23 | 36 | 20 | 19 | 24 | 16 |
| Diastolic B.P. | 93 | 100 | 85 | 85 | 90 | 75 |
| Systolic B.P. | 126 | 140 | 100 | 122 | 140 | 110 |
| On adoption of erect position— | | | | | | |
| Increase in heart rate | 22 | 30 | 14 | 9 | 12 | 4 |
| One minute after effort test— | | | | | | |
| Heart rate | 139 | 160 | 120 | 101 | 112 | 80 |
| Respiration rate | 34 | 48 | 28 | 23 | 32 | 18 |
| Diastolic B.P. | 99 | 110 | 95 | 85 | 90 | 80 |
| Systolic B.P. | 140 | 167 | 120 | 133 | 145 | 120 |
| Five minutes after effort test— | | | | | | |
| Heart rate | 128 | 148 | 100 | 88 | 100 | 76 |
| Respiration rate | 29 | 40 | 24 | 19 | 22 | 16 |
| Diastolic B.P. | 96 | 100 | 80 | 85 | 90 | 75 |
| Systolic B.P. | 134 | 160 | 104 | 122 | 140 | 110 |

criminate between fitness and unfitness. The controls were men whose physical state reached the normal standard, and whose history was untainted by disease hereditary or acquired. They include athletes, first-class footballers, professional boxers, gymnasts, and others convalescent from wounds, selected as really healthy subjects. The patients were all in the early stage of functional heart disease, caused by modern warfare. As is usual in these cases the symptoms far outweighed the physical signs. The characteristic features of debility and incompetence were present in varying degrees.

Anyone with even a moderate experience of soldiers suffering from heart disorders rapidly realises how misleading are the symptoms, when compared with careful observation and with the reaction produced by ordinary effort. In practice one finds it advantageous to note the main symptoms, and, if possible, correlate them with the physical findings, and blood-pressure tests. For example, a patient may complain of shortness of breath, excessive throbbing, and palpitation, pain and oppression in the chest, giddiness and faintness. Examination reveals myocardial degeneration. In another

patient with identical symptoms physical examination elicits nothing beyond possibly a mild tachycardia and a diminished response to effort tests, slightly exaggerated blood pressure reactions, but an entire absence of distress and the facial expression typical of true cardiac incompetence.

For this and other reasons one approaches the subject of "soldier's heart" in a most guarded and tactful manner. At the outset of treatment one must gain the patient's confidence, if possible. During the cure one must devote the maximum of attention both to the general bearing and appearance during effort; and, equally important, to the response on the part of the heart muscle. The practical interpretation of the latter is impossible without a full and complete appreciation of the capabilities of a normal heart.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOTOLOGY.

At the meeting of this section, held on March 21st, under the presidency of Mr. HUGH JONES, Sir THOMAS WRIGHTSON and Professor ARTHUR KEITH gave an account of a new theory of hearing.

A New Theory of Hearing.

Professor KEITH explained that the theory was Sir Thomas Wrightson's; he himself was merely responsible for the anatomical details of the inner ear. The theory had been outlined in a presidential address given to the Cleveland Institution of Engineers in 1876, but it had been quite overshadowed by the glamour attached to the theory of Helmholtz. In the Helmholtzian theory the internal ear was a sort of microscopic piano furnished with resonating strings almost ultramicroscopic in size, and some 16,000 in number. Each string or set of strings was supposed to pass into a state of vibration when its sympathetic note entered the ear. Each string or set of strings was supposed to have a corresponding nerve fibre, and we must suppose that these nerve fibres led ultimately to a central nerve-cell station or exchange, where 16,000 nerve cells received messages from their corresponding ear strings. However satisfactory from the 'point of view of a physicist, Helmholtz's theory from the standpoint of the psychologist, the physiologist, or the anatomist was an impossibility. The strings were there, but they were so placed and so conditioned that the one thing they could not do was to vibrate: Nature had taken the utmost care to render individual vibration an impossibility. In Sir Thomas Wrightson's theory, the ear acted as a single machine; it was the most minute and most delicately adjusted spring balance ever evolved, one designed not only to weigh the simplest sound wave, but also the most complex and voluminous. The ear not only weighed every fluctuation in pressure, but automatically registered and recorded the minutest variation through the hair cells or semaphores which form an intrinsic part of the machine. The system of messages or semaphoric signals transmitted from the ear may be compared to the dot-and-dash system of the Morse code; the whole of the organ of Corti is involved in the production of the code of signals. All the fibres of the auditory nerve are concerned in its transmission from the ear to the brain. It was a legitimate inference to suppose that the time signals carried on this code could be deciphered and sorted out at nerve synapses in the cerebral nervous system. Thus, Sir Thomas Wrightson's theory brings hearing into line with smell, taste, sight, and touch, whereas Helmholtz's theory, by presupposing that each fibre in the auditory nerve has its special function, breaks the most elementary law we know regarding the nature of nerve conduction.

The Evolution of the Cochlea and Organ of Corti.

Recent advances in our knowledge of the evolution of the internal ear throw a most definite light on the mechanism of the cochlea and organ of Corti. The ear was evolved from the balancing apparatus of the primitive labyrinth; the principle which had been adopted by Nature in working out the organ of hearing was merely an extension of the principle used in the primitive labyrinth. In the lowest fishes a closed vesicle on each side of the head, filled with fluid, serves as the central part of the labyrinth. On its floor is

a nest or island of hair cells; on the hairs is balanced an otolith; nerve fibres commence in or around the hair cells. So long as a fish swims on an even keel, the ciliary semaphoric system is at rest, but if it heels over ever so slightly, then gravity comes into play; the otolith, as it answers to gravity, bends the hairlets right or left, as the case may be, and in bending the hairlets, sets up certain tensions or changes in the living cells to which they are attached, and these changes are transmitted as signals or impulses along the attached nerves. In this simple semaphoric apparatus there are four elements: (1) the otolith or titillator, (2) the hairlet or lever on which the titillator acts, (3) the sense cell on which the lever acts, (4) the nerve fibres which are acted on, or stimulated by, the sense cells.

In the sense organs or signal stations of the semicircular canals, which have been evolved for the registration of body movements, we find the same four elements. The cupola represents the titillator, but it is no longer acted on by gravity, but by mass movements of fluid, set up in the canals during movements of the head. Bárány was the first to show that movement of the fluid in one direction gave one set of signals; movements in the reverse direction another and reverse set of signals. With the evolution of the cochlea and the organ of hearing the same four elements were used. The titillator is the tectorial membrane; the hairlets or levers, the sense cells, and nerves are as before, save that the sense cells are now set in an elastic scaffolding of fine elastic rods and fibres. But one novel change has been introduced: in the balancing apparatus of the vestibule the sense cells are fixed: the titillator is movable. In the ear Nature has reversed the arrangement and set the sense cells on a movable membrane—the basilar—a membrane which responds to every displacement of fluid set up by waves of sound impinging on the inner ear. On the other hand, the titillator is no longer free, but is tethered to the containing wall. Thus, in the utricular system the hairlets or levers were worked by gravity; in the canalicular system mass displacements of fluid set up by movements of the head bent the levers and gave rise to signals. In the cochlea the force employed in working the lever system was the minute displacements set up by sound waves, and the levers were bent by the field of hair cells working against the titillator or tectorial membrane.

The Processes Underlying Hearing.

The essential modifications required to make the otic vesicle into an organ of hearing are, first, a closed vesicle filled with fluid, and everywhere surrounded by bone of a peculiarly dense nature—all except at one area, where a minute window, the fenestra rotunda, is established. That window is essential; without it there can be no mass displacement of the fluid, and no hearing as sound waves sweep through the bony walls of the vesicle. In the passage leading to that window is placed the organ of Corti, the apparatus for recording the displacements of fluid set up by the bone-conducted sound waves. To make the ear a more sensitive machine another window is established in the bony wall of the vesicle—the fenestra ovalis—into which is fixed a movable piston, the stapes. By a bent lever formed by the ossicles of the ear this piston is yoked to the membrana tympani, and thus the ear is rendered infinitely more sensitive to sound impulses carried by the air. Closure of the fenestra ovalis by fixation of the stapes renders the ear more sensitive to bone-conducted waves; closure of the fenestra rotunda produces complete deafness. These facts cannot be explained on the hypothesis put forward by Helmholtz, but find a complete answer in the new theory.

Four phases are to be recognised in the completed movement of the lever or hairlet of a sense cell. Its upright or vertical position may be regarded as one of rest, its zero position. In the first phase of a complete movement the hairlet bends towards one side, towards the right we shall suppose; in the second it returns to its upright or zero position; in the third it bends towards the left; in the fourth it again returns to its starting position or zero. It is clear that different conditions of tensions and pressures will be set up within the hair cell in each of these four phases, and each phase, we may postulate, gives rise to a nerve impulse or signal. The signals set up will vary with the duration and force of each hairlet movement. In each sound wave Sir Thomas Wrightson recognises four corresponding phases. Two of these lie in the part of the wave where the air

particles are being condensed—the part in which there is a *plus* pressure; two of them lie in the part where the air particles are being rarefied—where there is a *minus* pressure. In Phase I. the pressure is rising; in Phase II. the *plus* pressure is falling; in Phase III. the *minus* pressure is increasing; in Phase IV. the *minus* pressure is decreasing.

Explanatory Value of the New Theory.

Sir Thomas Wrightson's original discovery, announced in 1876, was the recognition of the fact that if it could be supposed that each phase of sound wave did give rise to an effective stimulus in the ear, then the brain was supplied, through the ear, with a sufficiency of data to give a complete analysis of the most complex sound. Helmholtz had supposed that such an analysis could be accomplished only on the principle of resonance. Sir Thomas Wrightson showed that there was an alternative method. That each phase of a sound wave is effective in producing a most distinctive movement of the auditory hairlets was a later discovery, but formed a very essential part of Sir Thomas Wrightson's theory. It was a sequel to a neglected discovery of Sir William Bowman's, made about the year 1846, that the basilar membrane is made up of two parts, a striate zone and a hyaline zone, the latter resembling the capsule of the lens in structure and in staining reaction, and which must be regarded as elastic in nature. Sir Thomas Wrightson has demonstrated that the displacements which sound waves set up in the fluids within the ear act against the elastic resistance of the basilar membrane, and that thus each of the four phases of a sound wave, which he had originally postulated on a theoretical ground, do thereby become effective in producing a separate and distinctive movement of the hairlets. In Professor Keith's opinion the various parts of the cochlea, of the organ of Corti, and the conformation of the various liquid passages of the ear which were left unaccounted for on Helmholtz's theory, now received a satisfactory explanation.

Transmission of Pressure through the Cochlea.

Sir THOMAS WRIGHTSON said that from Professor Keith's remarks no idea could be gathered as to how much is owing to him in the presentation of this theory of hearing. As a distinguished anatomist who understands every detail of the parts involved, he grasped the idea that if a machine was required to transmit the varying pressures of a sound wave to the nerve terminations, that transmission must be of a dead-beat character. In the cochlea this transmission, according to the theory, is conveyed from the comparatively large area of the outer drum on which this air pressure acts through the bent levers of the ossicular chain to the smaller area of the stapes. The stapes is about one-fifteenth the area of the drum, so that, according to a principle well known to hydraulic engineers, the unit pressure is increased in the proportion of 1 to 15 in the cochlea, and a further increase is effected by the leverages of the ossicles. These increases in pressure imply a corresponding decrease in displacement of the stapes. By the laws of equilibrium in fluids, demonstrated 200 years ago by the distinguished French philosopher Blaise Pascal, we are bound to admit that every momentary change of unit pressure in the air wave would be thus multiplied considerably in the liquid of the cochlea between the stapes and the basilar membrane, and these varying unit pressures are instantaneously carried throughout the whole of the cochlea above the basilar membrane. If two separate pistons are placed in a cylinder with liquid entirely filling the space between them, pressure on the left piston will be transmitted right through the intervening fluid and move the second piston, exactly as though a solid connexion existed between the pistons; and this is also true however the area of the passage between the two pistons may vary, so long as the total space between the two pistons is entirely occupied by fluid.

How the Transmission is Effected.

We shall see that the transmission of pressure through the cochlea is effected sometimes by displacement of fluid, sometimes by the action of levers, but the effective units of work impinging on the drum membrane are all to be accounted for on the bending of the hairlets or nerve terminations, so that a dead-beat transmission of power exists from drum to hairlet. The basilar membrane is tapered in breadth from nil at the fenestral end to a maximum at the helicotrema end. One-fourth of its breadth throughout its length of 35 mm. is highly elastic,

while the remaining three-fourths of its breadth is inelastic and rigid. The inelastic part is hinged along one of the sloping sides of the tapered opening which forms the frame of the whole membrane, and the elastic or subarcuate zone is hinged on the opposite sloping side. When, therefore, the pressure comes upon the whole surface of the membrane, a triangular prism of liquid is displaced which at each moment is exactly equal to the displacement of the stapes. To the inner edge of the pectinate or rigid zone are attached the inner legs of the Corti arches, and as the outer legs rest as a pivot upon the sloping edge of the tapered aperture to which the elastic zone is also attached, the up-and-down motion of the membrane causes the apex of the Corti arch to move transversely to and fro. As the pressure—and therefore the motion—is nil at the fenestral end no motion is transmitted at that point, but as the arches approach nearer the helicotrema end of the basilar membrane, the pressure and displacement, and therefore the transverse motion, of the apices of the arches increase to a maximum at the helicotrema. The whole of this up-and-down motion of the basilar membrane is carried into the bent levers of the Corti arches, where it is once more carried through rigid levers. From the apex of the Corti arches the pressures pass into the reticular membrane which carries the hairlets. The upper ends of the hairlets penetrate the surface of the tectorium, and the to-and-fro transverse motion of the reticular membrane causes a bending of the hairlets, and such bending will be in proportion to the reactionary pressure at the tip of the hairlet resting in the tectorium. The basilar membrane being 13 times the area of the stapes, the total pressure will be, at each moment of time, 13 times that on the stapes, according to Pascal's law, but this pressure and displacement divides itself, as explained, from nil to maximum over the whole length of the basilar membrane, and the bending of each elastic hairlet is the measure of the pressure between its end and its contact with the tectorium, according to its position in the whole length of the basilar membrane.

Resultant Curves of Pressure.

Sir Thomas Wrightson also pointed out how the resistance of the elastic portion of the subarcuate zone and of the deflecting hairlets and other portions of bending solids in the cochlea act in accordance with the laws of elastic solids, as demonstrated about 200 years ago by our great scientist Robert Hooke. The difference between the pressure of the sine wave and that of the combined Hooke resistances causes a change in the residual curves and introduces indications of fresh impulses in the four phases of the sine curve. Diagrams were shown of the resultant curves of pressure in the liquid of the cochlea, and in these the time positions of the impulses were seen to coincide not only with the well-known time positions of the simple sine wave forms, but of compounded tones, where the time positions of the differential tones, the summational tones, the octaves, and other harmonics are revealed, all being confirmatory of the theory. The residual time pressure represented by the final liquid curve has to reach the brain by some process, and the speaker suggested that this might be explained by assuming a nerve current always passing through the point where the hairlets and tectorium meet. Professor Hughes's great discovery of the action of the microphone—in which, where an electric current was passing through a circuit in which a slender point of contact was subjected to the varying pressures of a sound wave, the sound wave was transformed into an electric wave, which, after passing through a telephone wire to a receiving telephone, could there be reconverted into a sound wave—such a condition is, perhaps, worthy the consideration of physiologists as a means of carrying the wave form to the brain. The means by which such transmission rises into consciousness, God alone knows.

Discussion.

The PRESIDENT, in inviting discussion, said he did not feel clear as to the explanation of bone conduction on the new theory. The fact of the stapes being quite fixed, and possibly the foramen rotundum also, would presumably convert the canal walls into a rigid inelastic structure, and it was difficult to see how the suggested mechanism acted when stimulation was through bone conduction.

Sir R. H. WOODS thought the theory fitted in with what had been known anatomically for a long time. He did not think

the question of bone conduction need present much difficulty. If bones were in a state of vibration they must agitate the internal nervous mechanism and shake up the intracochlear fluids, and so there must be some movement between the hair cells and the organ of Corti.

Professor KEITH said that in certain conditions which fixed the stapes, or when the drum was perforated, there was often quite considerable hearing when pressure was put on the stapes to keep it fixed. Helmholtz's theory gave no explanation of that.

Professor ALBERT A. GRAY (Glasgow) said it was common, in regard to all theories, to speak of the labyrinth as a closed cavity, but in some animals it was far from being a closed cavity. The present theory also assumed the same thing, but he did not think the assumption was justified. He had difficulty in accepting this theory from the standpoint of the physiologist also. The Helmholtz theory could not be right, but it might be modified. By the new theory as now propounded people were asked to believe that nerve fibres could transmit sound vibrations varying in rate from 30 to 30,000 per second, and transmit them without fusion with a very accurate perception of pitch, especially in the middle range. This meant that they passed through the various media without interruption and the brain analysed them out. And what must be said when the skilled ear was able to analyse several simple tones compounded together? He did not think this marvellous power of sound analysis could be located in the brain; it was more likely to reside in the cochlea. There was still much to be learned about nerve conduction.

Mr. SYDNEY R. SCOTT, after discussing the new theory in detail, said he had a case in which the patient had lost perception of low tones, and suffered from tinnitus. He operated on the middle ear in the hope of destroying the tinnitus, and found the stapes absolutely normal, as well as the malleus and incus and the drum. The stapes came out perfectly, yet the Weber and Rinne tests indicated what was termed fixation of the stapes. He could not see whether or not the round window was closed; but in some such cases the round window would be found to be ossified.

Mr. RICHARD LAKE expressed surprise that no one had referred to the ossicular chain as an accommodating mechanism in the conveyance of sound. But good hearing was possible without that chain. In America the stapes was removed in a number of cases, and the hearing was often improved afterwards. He believed the ossicular chain was intended partly for protection, and partly as an accommodating medium, so that shock due to a sudden loud noise was prevented from damaging the vestibule. The drum was not important for hearing, but it kept the middle ear moist, so that sound waves could pass through well.

Dr. W. HILL asked whether otologists were to believe that the labyrinth was of no use as an analysing organ. And surely the cochlea was as much a functioning apparatus in this theory as in that of Helmholtz. He had held the view that part of the hearing function not only was conducted through the ossicles, but aerial conduction across the tympanum to the membrana secundaria, and that seemed to stand in the way of acceptance of any theory which had been advanced up to the present time.

Dr. DUNDAS GRANT said one of the difficulties he had felt in regard to the Helmholtz theory was in trying to see the wave running up the scala vestibuli, round the helicotrema, and down the scala tympani again, whereas a movement must have taken place at the base of the cochlea long before that. The fact that the pressure was equalised all the way up owing to the membrane being wider at the part where the pressure of the fluid had become almost extinguished was a basis of truth likely to stand for all time.

The discussion was continued by Mr. JENKINS, Mr. W. STUART-LOW, and the PRESIDENT.

Sir THOMAS WRIGHTSON, in the course of his reply, reminded members that the middle ear was connected with the air through the medium of the Eustachian tube. When the drum moved inwards that must make a difference in the motion getting through to the hairlets: the connexion was through solids which were articulated together. With regard to the difficulty as to the analysis of compound sounds, one had only to remember the analogy of the telephone wire, through which every tonal character of the speaker's voice was easily recognised by the receiving ear.

Cases were shown.

Reviews and Notices of Books.

Physiology and Biochemistry in Modern Medicine. By J. J. R. MACLEOD, M.B., Professor of Physiology in the University of Toronto, Canada, formerly Professor of Physiology, Western Reserve University, Cleveland, U.S.A., assisted by ROY G. PEARCE, B.A., M.D., and Others. London: Henry Kimpton. 1918. Pp. 903. 37s. 6d.

THE principal advances in modern physiology have been made by the application of chemistry and physics to the study of vital phenomena. This may be the reason for the inclusion of the term biochemistry in the title, for the volume before us deals with the chemistry and physics of physiology and omits histology and the usual description of the central nervous system, those portions of the subject which in the opinion of many belong to anatomy.

The book is divided into nine parts. Part 1 is a summary of those portions of physical chemistry intimately related to physiology. This subject to most readers is difficult, and possibly might well be slightly enlarged in a future edition. We find that not only in this part, but also elsewhere, is there a short description of experiments, a description quite insufficient for practical work, and, moreover, not enough to make the problem clear. It would be better to exclude these entirely and use the space for amplification of the theory. An elimination of the description of the chemical formulae would also save space. The structural formulae of the substances should be a sufficient reminder to the student, who nowadays is usually well instructed in organic chemistry and should understand how the formulae are built up.

Parts 2 and 3 are on blood and its circulation. The final chapter of this part is on shock, the main symptom of which is a pronounced lowering of the blood pressure. As Bayliss has pointed out in his book on "wound shock," the cause here is partly nervous and partly chemical, and the shock is exaggerated by hemorrhage. He has shown experimentally that the blood pressure can be effectively raised by the injection of gum solution; in this way proper circulation is maintained, so that toxic products arising from damaged tissue are oxidised and excreted; a free supply of oxygen also prevents damage to the nervous system. Professor Macleod's book mentions the injection of gum solution to raise the blood pressure, and this is an example of the care he has taken to produce a book which is really up to date, as well as to show the value of physiological research in its application to medicine. Part 4 is on respiration. Mention is herein made of recent work on the transportation of carbon dioxide. Though the bulk of the carbon dioxide is contained in the plasma as carbonate it appears that the exchange of the gas is effected by hæmoglobin (G. A. Buckmaster).

Parts 5, 6, and 7 are concerned with digestion, excretion of urine, and metabolism. Under metabolism we read of the independent value of the several units composing the protein molecule. The value of lysine for the growth of young animals is fully appreciated; this unit is fortunately present in abundance in lactalbumin. The problem of accessory food substances is also well described. We think that too much stress has been laid upon the work of American investigators. The results of British workers are not sufficiently mentioned, and they are of far-reaching importance. The symptoms of beri-beri can be eliminated and prevented by the addition of yeast extracts to the food. The symptoms of scurvy are removed and prevented by the addition of orange and lemon juice, swede juice, and germinated peas, and are not prevented by the popular lime juice and grape juice. The antiscorbutic value of fresh, unboiled milk as described by the author is confirmed by the recent British experimental evidence from monkeys. Part 8 treats of the endocrine organs, one of the most interesting sections of the book. The best known of these internal secretions is that of the adrenal gland. The active substance was isolated long ago, and we read that so small an amount as 0.00008 mg. per kilo. of bodyweight will produce a distinct rise in arterial blood pressure. Such figures should encourage chemists to attempt the isolation of the active substance in the other endocrine organs and to proceed to the toxins produced by bacteria, although smaller doses than the above appear to produce the specific toxic effect. They are tangible quantities, but it will mean working with kilos. of dried bacteria!

The last part describes the modern researches on the central nervous system. The whole most certainly brings out the varied aspects of modern physiology, and connects them to clinical observation, a valuable adjunct to a textbook of physiology. Both student and clinician will find the book extremely helpful, and it should command a wide circle of readers. But the price is excessive even in these days of difficulty and will prevent many from learning the close connexion between physiology and medicine as it has been so clearly presented by Professor Macleod.

The Early Treatment of War Wounds. By Colonel H. M. W. GRAY, F.R.C.S. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 299. 10s.

THIS book is replete with sound, general principles, set down by one who, as a consultant surgeon in France for three and a half years, has had great opportunities of coördinating his ideas and seeing that they have been carried out. It is very interesting to find in print those principles which have led to the well-earned reputation of the author as a war surgeon.

The book commences with a sketch of the method of dealing with wounded men in the advanced units, and in the main describes how to deal with the condition of shock from various causes, and insists on the desirability of dealing with this prior to transference to units farther behind the line. It passes on to describe the treatment of cases in the C.C.S. during the pre-inflammatory stage, and especially in an excellent chapter deals with the question of secondary shock. A short discussion on the use of various antiseptics is given, with special reference to the salt-pack treatment, which was first instituted by the author in France. The remainder of the book deals with the general principles of the treatment of wounds, first as a whole, and later in sections. One notable omission is the treatment of abdominal wounds, for which the author refers the reader to other authors. Had this book appeared two years ago it would, no doubt, have had a wide circulation and have proved of immense value to those working in the field, whereas now it will mainly serve as an excellent record and as a guide to general principles of treatment, many of which can be applied to civilian surgery.

Lenzmann's Manual of Emergencies, Medical, Surgical, and Obstetric: Their Pathology, Diagnosis, and Treatment. By J. SNOWMAN, M.D. Brux., M.R.C.P. Lond. London: John Bale, Sons, and Danielsson, Ltd. 1919. Pp. 345. 15s.

THE present manual is based upon the English edition of Lenzmann's "Emergencies in Medical Practice," which appeared in 1914. This work dealt with the diagnosis, pathology, and treatment of dangerous emergencies which suddenly threaten life. It therefore expressly excluded such injuries as fractures, dislocations, and other morbid conditions not in themselves dangerous to life. Lenzmann's excellent scheme has been closely followed by the present writer, but the text itself has been entirely re-written and the subject matter revised so extensively that the manual may fairly claim to be a new work, representative of the teaching of standard British authorities on medical, surgical, and obstetric emergencies.

The book is composed of seven sections, dealing respectively with dangerous emergencies arising in connexion with diseases of the respiratory, circulatory, and nervous systems, with the digestive and urinary tracts, and with midwifery practice and poisoning. To take, for further example, one system in detail—the circulatory—the following are the conditions dealt with: cardiac asthma, syncope, attacks, auricular fibrillation, angina pectoris, toxic infection of the heart, rupture of the heart, wounds of the heart, and acute pericardial effusion.

The trend of the book is eminently practical, and what is more the practice advocated is based upon sound principles. Constant reference is made to anatomical, physiological, and pathological facts in elaborating the treatment of the particular "emergency" under consideration. The book is adapted to the needs of the general practitioner, and it would be difficult to find one of greater use to the man who has recently qualified or who is holding a resident appointment. It is written in an easy and pleasant manner, and what especially commends itself to us is the absence of vagueness in the sections concerned with treatment. The author is not likely to fall one at the critical moment. All the necessary

directions for carrying out the treatment which he recommends are supplied, and there are few directions which are not well within the scope of the general practitioner's means.

One of the most interesting sections is that devoted to infantile convulsions, where the recent conception of the part played by calcium in the body metabolism receives due notice. Experiment has shown that the irritability of the cerebral cortex is greater when the calcium content of the blood is low than when it is high. It is also known that removal of the parathyroid glands in animals is followed by lowering of the calcium content of the blood and by the convulsions of tetany. It is suggested, therefore, that certain toxæmias such as occur in rickets may produce parathyroid insufficiency and an abnormal calcium metabolism and thus predispose to convulsions.

An excellent chapter deals with the practical side of serum sickness and the prevention of anaphylactic phenomena. The book is printed in good type, and there is a full index.

Essentials of Medical Electricity. By ELKIN P. CUMBERBATCH, M.A., B.M., B.Ch. Oxon., M.R.C.P., in charge of the Electrical Department, St. Bartholomew's Hospital, &c. Fourth edition. London: Henry Kimpton. 1919. Pp. 368. 7s. 6d.

THAT this volume has met a decided want in a satisfactory manner is proved by the appearance of this, the fourth, edition. The whole subject of the medical and surgical use of electricity has received a great impetus during the war, with the result that it is in a state of flux, and what may be thought true to-day will not be necessarily the truth of to-morrow. This edition has been thoroughly revised and many parts rewritten, particularly the chapter on the electrical testing of the reactions of muscles and nerves. The physiological and pathological principles underlying this matter are fully dealt with, and some additional notes on the use of condensers have been added. Further experience in the applications of diathermy has enabled the author to give a more complete account of the value of this important agent in medicine and surgery.

Recent additions to the electro-therapist's equipment, such as the Tripler coil, the water rheostat, the latest forms of high-frequency apparatus, and many others are described. These, with other minor additions, bring the book up to date as far as is humanly possible.

The Examination of Milk for Public Health Purposes. By JOSEPH RACE, F.I.C., City Bacteriologist and Food Examiner, Ottawa, &c. First edition. London: Chapman and Hall, Ltd.; New York: John Wiley and Sons. 1918. Pp. 224. 8s. 6d. net.

THIS book has been written as a practical guide for those engaged in the chemical and bacteriological examination of milk for public health purposes. It is, perhaps, more detailed than the ordinary student will require, but will be found valuable to those who are interested in the production and control of milk. A full description is given of milk and its constituents; a chapter is devoted to the consideration of the normal composition of milk, and the influence on it of such factors as the breed of the cows, the various types of food, season, the interval between the milkings, and the stage of lactation. Milk standards are discussed, the author holding the opinion very strongly that milk should comply to a definite standard and not be regarded as "the secretion of cows, without additions or abstraction," as in the latter case a premium is placed on quantity regardless of quality, and encourages the breeding of cattle secreting large quantities of milk of a comparatively poor quality.

"In both the United States and Canada milk standards are of an entirely different nature to those obtaining in Great Britain; the minimum limits of composition are clearly defined by ordinance or statute, and admit of no appeal to the cow. These standards are to be regarded as specifications of what is required to be sold as milk and not the minimum quality that might reasonably be expected by the purchaser. This is equitable, as the purchaser, for a given price, should receive an article of definite quality and not something that may be the minimum quality produced by natural variations. To achieve this, the dairyman must so grade his herd that the mixed milk will at all times comply with the standard."

A full account is given of methods of chemical examination; the question of bacteria in milk is discussed, and the sources of contamination, both intra- and extra-mammary; contaminating organisms are described, together with the

methods employed for isolating them; the influence of various factors, such as bodily cleanliness, housing, litter, feeding before or after milking, thoroughly stripping the udder, &c., on the bacterial count is treated fully, and many useful tables are given to illustrate the facts which are brought forward. Now that the standardisation of milk is so much in the mind of everybody, this volume will be found useful in supplying a clear account of what milk is and ought to be. An excellent bibliography is added to each chapter.

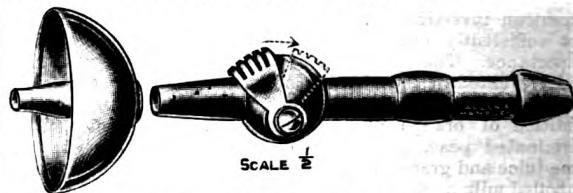
Sanitation in War. By P. S. LELEAN, C.B., F.R.C.S., F.C.S., D.P.H., Lieutenant-Colonel R.A.M.C., Assistant Professor of Hygiene, Royal Army Medical College. With an Introduction by Surgeon-General Sir ALFRED KEOGH, G.C.B., M.D., F.R.C.P. Third edition. 1919. London: J. and A. Churchill. Pp. 368. 7s. 6d.

THE third edition of this admirable manual has been prepared by Professor Lelean while on active service in Palestine. We call attention again to the brief but complete account which he gives of the causes of sickness in the Army, together with the means of prevention, including descriptions both of the older methods of disinfecting and of those evolved during the present campaign. The Thresh apparatus is figured alongside the "Field Sterilising-box" and the "Serbian Barrel," and the scheme for using these barrels for de-lousing of units is detailed, as also the use of the boiler-and-sack de-lousing apparatus and the disinfecting train. The rôle of insects in war is fully and practically handled, and protective measures against fly-borne infection and anti-vermin measures are duly set out. The chapter on Conservancy in the Field is of particular value; the various means for the disposal of refuse are considered, and the several types of destructors are included. Chapter VIII. is nearly entirely devoted to illustrated descriptions of a number of sanitary innovations evolved during the last four years, including latrines, incinerators, de-lousing apparatus, camp kitchens, and improvised cold storage; the examination of water and its purification by means of sterilisers, filtration, or by chemical means, are fully described. The whole makes an essential sanitary handbook.

New Inventions.

A URETHRAL NOZZLE.

THE accompanying illustration shows a nickel urethra nozzle which I have designed in order to overcome certain defects that appear to me to occur in existing models. It consists of a nozzle and shield in one piece which plugs on to the stem containing a stopcock on its shank. Nozzles which consist of a single piece are, after sterilisation, liable to be soiled in fitting them to the tube. In my model the front portion, after sterilisation by boiling, is picked up with a square of sterile lint and fits snugly and very easily on to the stem. Undesirable handling is thus reduced to a minimum. Extra front portions may be purchased to fit the stem for use in busy out-patient departments. The stem



portion is kept attached to the tube of the irrigator and when not in use these lie in an antiseptic bath. The instrument has a bore of good size throughout to allow of sufficient flushing. The bevelled anterior end of the stem is so shaped that it can be used to fit the funnel-shaped extremity of a rubber or gum-elastic catheter, and is thus very useful for bladder washing.

The instrument has been made for me by Messrs. Allen and Hanburys, 48, Wigmore-street, London, W., to whom my thanks are due for carefully carrying out my instructions.

JAMES B. MACALPINE,
Hon. Surgeon, Salford Royal Hospital; Surgeon in Charge
of Genito-Urinary Department, Salford Royal Hospital.

THE LANCET.

LONDON: SATURDAY, MARCH 29, 1919.

The Position of the Demobilised Practitioner.

UNTIL a week ago the demobilisation of civilian doctors from the Royal Army Medical Corps was directed by the Minister of National Service on the lines of a priority scheme drawn up by the Central Medical War Committee. This scheme took into careful consideration the interests of the candidate in regard to length of service and the claims of his practice and financial position. In the last few days the pace of demobilisation has been speeded up to such an extent that all these niceties have gone by the board, and, as will be seen in another column, the Central Medical War Committee has laid down its advisory function in demobilisation. This being so, we would draw attention again to the letter which appeared in THE LANCET of March 15th, signed by Dr. NORMAN MOORE, the President of the Royal College of Physicians of London, and Sir GEORGE MAKINS, the President of the Royal College of Surgeons of England, in which it was pointed out that certain of the conditions arising in the course of demobilisation have not received sufficient attention from the authorities. For it is a fact that the status and prospects of the medical practitioners who have been serving abroad have attracted slight consideration in spite of the activities of the Central Medical War Committee and of its Committee of Reference, formed from the English Royal Corporations. These statutory committees made the best temporary arrangements which they could to preserve, while the war was on, the interests of practitioners who had been called to the service of the country abroad. Their work is now honourably ended, and yet the future of many of the men whose interests they have protected is precarious.

The medical profession as a whole resents the fact that this should be, and the representations of Dr. NORMAN MOORE and Sir GEORGE MAKINS have been clearly designed to arouse the public conscience to the position. They point out that the medical men who have been working at home have generally behaved with the utmost fidelity to those who have been called away, and we believe it is a fact that the majority of the medical men who remained in the country conformed to the various plans that were suggested for the maintenance of the interests of their colleagues abroad. Cases there have been where the man at home has not played so generous a part, but their number has been exaggerated; and even when they have occurred the fault has primarily lain with the public, who were quite unable to see that by exercising their right to a choice of doctor in too strict a manner they might be severely injuring men who were fighting the cause of the country on

foreign soils. The difficulties attendant upon dividing up into their original constituent parts practices that have become conglomerated, and that have changed in environment and personnel, are many and obvious. During four and a half years of war many patients have died and many have been born, while small neighbourhoods have become very large and large neighbourhoods have shrunk. Houses are empty that were overfull; houses are sought for where no such accommodation exists; so that there is no return to a general pattern in correspondence with which a division of existing practices can be made in any strict manner. For these reasons it is obvious that the future position of the demobilised practitioner can only be ensured by a public comprehension of the conditions. Public bodies may be trusted to reinstate, as far as possible to their former posts, the medical officers who before the war held appointments in their service; but it is essential that the public should aid the demobilised practitioners by the promotion of a general feeling that their former patients should continue to call them in; and it may be pointed out that in most instances those who have served with the forces are returning with an enlarged experience, a broader outlook, and a more intimate knowledge of men and manners—qualities which are likely to be of great value to their patients.

Simultaneously Sir ROBERT PHILIP, President of the Royal College of Physicians of Edinburgh, and Mr. R. MCKENZIE JOHNSTON, President of the analogous College of Surgeons, drew attention in these columns to the problems of demobilisation as they affect the general practitioner of medicine, and they too ask for sympathetic consideration from the general public.

"Many doctors," they say, "who throughout the war have held commissions in the Navy, the Army, or the Air Force have now to face the question of return to civil practice. This is for them far from an easy matter. The natural growth of their practices has ceased during their absence. In spite of loyal help given, in most cases, by their colleagues—who deserve all thanks for their ungrudging efforts—and by professional committees, to hold together the practice in the interest of the absentee, the normal wastage due to deaths, changes of residence, &c., has had the effect of materially reducing the practice from what it was in 1914. Beyond such unavoidable influences there is risk of curtailment from other causes."

The Scottish Presidents further make the good point that in a profession like medicine, where the work is essentially personal, the future of the demobilised medical men must depend on the attitude of the general public; and they would have the public interpret this personal feeling rather less narrowly than is expressed by the admitted right of the public to employ whatever doctor they choose. Where the personal relations of the patient to his medical man were, before the war, of the properly trustful and confidential sort, the patient should be ready—indeed, should feel it an honourable duty—to return to his old adviser, whose absence from his practice has been at the call of the country. It is true that in the meantime similar pleasant relations may have arisen between the patient and the medical man acting on behalf of his absent brother; but while the substitute doctor is ready with all loyalty to hand over the patients to their former adviser, the delicate task of transference will be enormously simplified if the public acquires the feeling that such transference is right.

Immunity: A Further Advance.

THIS week we publish a notable contribution by Sir ALMROTH WRIGHT and his collaborators concerning the methods and reinforcements of the wonderful bodily mechanisms of defence against germ invasion. Sir ALMROTH WRIGHT deals meticulously with the details of these mechanisms and illustrates them characteristically by ingenious experiments of extreme simplicity. The war has taught us lessons in immunity and the writer induces therefrom much which experienced workers in vaccine therapy have long noted empirically and only subconsciously attempted to explain, and the view-point always to be upheld is that of TENNYSON when he wrote: "Tis better to fight for the good than rail at the ill." Sir ALMROTH WRIGHT very clearly condemns those who illogically expect indiscriminate magic at the hands of the constructive bacteriologist.

This lecture, delivered at the Royal Society of Medicine, opens with the hardly accepted assertion that "if the surgeon provides the necessary conditions the protective mechanism of the body can, *without any antiseptics* (the italics are ours), deal successfully with every kind of infection." This is followed by the second axiom to the effect that "in connexion with antityphoid inoculation the signal success of the procedure has made it manifest to everybody that the natural powers of resistance of the human body can be signally reinforced by inoculation." One of the corollaries which follow from these axioms was illustrated by PASTEUR when he showed that vaccination during the incubation period of rabies can be effective despite the already existing infection. But, as WRIGHT continues, "it was in everybody's mind that immunisation took ten days to establish itself"; yet he has shown that protective substances in antityphoid inoculation are formed much earlier than this. Moreover, one region of the body may be making immunising response while the other is inactive, as in the incubation period of infective disease. Bearing these principles in mind, the lecturer proceeds briefly to review the results, good and ill, of vaccines generally, and he lays special stress upon the excellence of streptococcal vaccines and also upon tuberculin (called by some "the mother and the father of vaccines," by others "a poison pure and simple") in certain joint conditions and also in phlyctenular conjunctivitis. Three reasons for the failure of vaccines are clearly denominated. First, when the infection, as in phthisis, is producing steady toxæmia; secondly, where pent-up pus or gross necrosis obtains unremoved; and, thirdly, where the infection is long standing. It is well to have clear statements like these to guide us, although some would perhaps prefer to qualify them. The lecturer emphasised the extreme importance of the transport of leucocytes and antibodies to the site of infection (kata-phylaxis), yet when this transport breaks down, as it may, and the alkalinity of the lymph is blunted by acid metabolism, even microbes like the gas-gangrene bacilli may flourish unopposed, though ordinarily they grow with immense difficulty in the blood. Reinforcement, as by leucocytosis, is named "epi-phylaxis"; our old friend "the negative phase," which we had rashly thought to be as extinct as the dodo, revives, like the phoenix, from the fire of controversy and becomes the "apo-phylactic phase." An "ec-phylactic region" occurs where a strong focus of infection entrenches itself and defends itself by

radiating toxins, and so on. We are aptly reminded that leucocytes "can only crawl along surfaces and creep along the trellis-work of the tissues" and hence we may induce their impotency when drowned in an effusion. Through all this we can now see why preventive inoculation, unhindered as it is by all these antagonisms, is so successful, and also we note the probability that curative inoculation is likely to be no easy matter. Sir ALMROTH WRIGHT does not add that this may incline the medical man to lean more to serums, but this point seems borne upon us. Vaccine therapy will less frequently make shipwreck through default of epi-phylaxis than through deficient kata-phylaxis, as with an unopened abscess. The surgeon's responsibility is made plain by the laws of nature! Flooding with fresh lymph, preferably drawn in by hypertonic saline, is preferable to cupping for mechanical reasons. Massage is of little use in such circumstances. Hypochlorites benefit only in virtue of the hyperæmia they produce, as the Germans hold, and are not too trustworthy. Hot fomentations and passive congestion are more logical as common aids to our hand. In relation to wounds, WRIGHT shows that by neutralising the acid metabolites with wholesome blood the organisms can be reduced to a few aerobic types (serophytes), which are incidentally eminently amenable to leucocytosis, and therefore to vaccine therapy. Leucocytes, we are told, can radiate their lethal powers to a distance under proper conditions (telergic action).

Sir ALMROTH WRIGHT has a gift envied by the playwright—his last act is as good as, or better than, the rest of the play. In the latter part of his lecture some most novel and arresting experiments are detailed and deductions advanced. These constitute an immense assistance to our better understanding of immunity. In relation to wounds the lecturer shows that as the result of inoculation the antityphoid power of the blood is collaterally increased, and thus the hardy serophytes can be eliminated. *Within even two minutes* of giving a vaccine a rabbit developed marked bactericidal powers in its blood which, however, subsided completely in 48 hours as regards the blood, but left the subcutaneous lymph with antiseptic properties. An overdose of vaccine, as we should expect, produced a definite lowering of bactericidal power, and this is why dabbling in vaccines is so dangerous. Benefit from vaccines is additionally non-specific. Dr. LEONARD COLEBROOK shows that even a foreign body such as lint, when sterile, will produce an antiseptic zone. These remarkable results were reproduced in the test-tube, and as a logical sequence in a very chronic and severe case of streptococcal necrosis, a donor's blood was immunised *in vitro* by an autogenous vaccine from the case and then the serum was separated and transfused with immediate therapeutic success. This process WRIGHT calls "immuno-transfusion." The vaccine added to the serum *in vitro* was graduated to body-fluid-weight in order to secure the optimum result. The prospects opened up are most promising. In the future we may be able thus to secure the optimum vaccine and its dosage by simple laboratory tests, and in the event of the failure of autogenous vaccines we are encouraged to try less homologous strains. Numerous examples of the success, prophylactic and curative, of non-specific vaccination, such as the protection against malaria

conferred by antityphoid inoculation, are quoted, not forgetting the classical example of cow-pox vaccine. Hence it is not too much to say that this latest contribution to our knowledge of therapeutic immunity is immensely valuable, and the profession owes an increasing debt to the brilliant pioneers of vaccine therapy led by Sir ALMROTH WRIGHT. The British school of constructive bacteriology has deserved well of its country.

Medical Research and its Place in the State.

DISCUSSION has arisen inside and outside Parliament as to the position of research in relation to the Ministry of Health. The Medical Research Committee, set up in 1911 by Mr. LLOYD GEORGE as an integral part of a complete system of National Health Insurance, had no more than felt its feet when the claims of the war diverted its activities into other channels. The last five years have witnessed an increasing estrangement of insurance research from insurance practice, for which regret has been expressed in each successive annual report. The Committee has in the meantime become responsible for a vast field of research in connexion with matters arising indeed out of the war, though in many cases the connexion existed because war acted as a stimulus to a torpid hygienic conscience and made the impossible capable of realisation. The Ministry of Health Bill proposes to make the estrangement into a decree absolute of divorce—at any rate if there are no words excluding medical research from the activities of the Ministry of Health, there are no words which contemplate the support of medical research. The Bill, as drafted, separates the Research Committee permanently from the Insurance Commission so soon as the latter is taken up into the Ministry of Health, and places medical research under the ægis of the Privy Council, which already controls, in name at least, medical education and medical discipline. In a memorandum issued as a Parliamentary paper last week by Dr. ADDISON, to which Sir WALTER FLETCHER contributes a technical appendix, the separation of research from a Ministry of Health and its attachment to a central administrative department is justified on the ground that research knows no territorial boundaries and that medical investigation should be in close association with other scientific and with industrial investigations. The Privy Council already has its Advisory Council for Scientific and Industrial Research, and experience has shown that incidental discoveries often arise in pursuit of the main objects of a particular research which need to be brought to the notice of other interested departments. The non-medical work of RÖNTGEN, it is pointed out, gave X rays to medicine, and PASTEUR'S classical experiments in crystallography led to the discovery of fermentation, and thence to the conception of bacterial action, which is the basis of half modern pathology. Certainly to outward seeming ad hoc research in cancer has not led to dazzling results. All these things, and many others which will occur to the minds of our readers, prove the value of a Medical Research Committee working on general or—if we prefer the adjective—Imperial lines, but they do not remove the need for medical research as inspiration, check, and guide to the maintenance of national health under the Ministry of Health.

Within Parliament Sir PHILIP MAGNUS and the three representative medical Members who followed him in the recent discussion on the Ministry of Health Bill, were urgent in their desire to keep the Research Committee in association with the Ministry of Health. Their arguments were unassailable and to some extent prevailed. It can evidently be nothing short of a calamity if, just when the time and labour spent on furthering the public health are no longer to be dissipated by incoördination and overlapping, research is to be excluded on principle, or even by implication, from the coördinating authority. The exclusion would, rightly or wrongly, be taken as a slap in the face to scientific medicine. In the event of a great epidemic the Ministry of Health must be in a position to ask its own research committee at once to investigate the conditions under which the disease originated, and the means to be employed to meet it. In the view of many keen sanitarians and reformers medical research is not so recondite a field that it cannot safely include the everyday problems with which a Ministry of Health will be called upon to deal. Medical research kept thus in close contact with practice should retain enthusiasm and continue in practical channels to a greater degree than some of the existing foundations for medical research have succeeded in doing. Until quite recently the reproach was often levelled at physiology that, like pure mathematics, it gloried in the absence of mere material results, and was dominated largely by the nerve-muscle preparation school. War drew the physiologist into touch with urgent everyday problems, with results fruitful both to industrial life and physiological science, but the diseases of peace are more multifarious, threatening, and deadly than those of war. The position will, we think, largely be determined by the view that is taken of the processes underlying research. Research with a big R, appearing with growing frequency in the columns of our lay contemporaries, seems totally distinct from the research going on all and every day in the practice of medicine and hygiene. It has something of the transcendental atmosphere in which the sons of men waited while God and Satan devised schemes for the patient Job to put to the test of experience. But research, and we state it ad nauseam, is no prerogative of the laboratory or the side-room or the experimental ward. It depends on an attitude of mind which may or may not be found in these places, but which must be found in the daily practice of medicine, if medicine is to remain a living reality. The chief characteristic of the spirit of research lies in the retention of alertness of mind and of purity of motive in the pursuit of knowledge for the sake of knowledge. It may be a fact that in the serene atmosphere of the Privy Council the minds of the originators of research are set free from sordid questions of finance; on the other hand there is something stimulating in the keen competition of the party system at its best, which leaves no place for the inertia which may follow upon permanent officialism. Parenthetically, we regret Dr. ADDISON'S fear of departmental jealousies and interested Ministers, working against a medical research bureau belonging to the Ministry of Health.

It is on the internal organisation of a medical research service as much as on its external position that the value of such a service depends. In no other service is an esprit de corps so essential, for each of its members should be at the disposal of the service, for such research

work as is needed, under the direction of any senior member of the service or in collaboration with a team of workers attached to other departments. We are here almost predicting, and certainly advocating, a regular service of medical research, wherein the best men receive life appointments, and where a probationary service might be needed for confirmation of the appointment. A service conducted on these lines might well constitute a reservoir from which professors and teachers in pathology, bacteriology, and biological chemistry would be selected, and in the future we may presume also the assistant physicians to hospitals. We may be still far from the concentration of a research service round an institutional school where periodical conferences of all grades of workers would suggest fruitful directions for research—this being the text of an interesting memorandum which many of our readers may have seen; but certain it is that the more directions in which medical research is employed the more valuable, though unexpected, will be the results. The war proved, as has been said above, that invention follows on necessity, but over and over again it has been found that necessity in one direction has led to invention which proved more useful in another. For this reason it is valuable that problems in medical research should be put up to the workers so that they may receive the exciting stimulus of a difficult question to answer. So many of these difficult questions remain unanswered in the province of domestic medicine that it seems to us absolutely necessary for the Ministry of Health to have at its command a bureau of medical research. In deference to this feeling, it is understood, in the report stage of the Ministry of Health Bill a suggestion of Dr. A. C. FARQUHARSON, that there should be included in the Bill provision for a research department under the Ministry of Health, was accepted.

Clinical Meeting of the British Medical Association.

WE publish this week the programme of the Clinical Meeting of the British Medical Association, which will be held in London from April 8th to 11th inclusive. The sectional meetings will be held at the Imperial College of Science and Technology, South Kensington, by the courtesy of the Rector, Sir ALFRED KEOGH. As will be seen by the programme, and as would be only natural in the circumstances, the scientific activities centre around the war and its results, and it must happen that those who open the discussions will go over ground much of which has been traversed by themselves and others previously. This, however, should afford all the better opportunity for valuable debate. With the cessation of hostilities a term was put to much of the medical work undertaken during, and developed because of, the war, and such work can be closely reviewed as it made good up to a certain point. The question at issue, of course, is not so much what is the qualitative and quantitative value of the proceedings taken during hostility, as the question to what extent will these proceedings be useful in a world of peace, where there is no abatement from the trials of disease and the shocks of injury. How best to adapt the lessons learned in war to ameliorate the conditions prevalent in peace must be the objective of all medical congresses in the immediate future.

We have been asked to draw the attention of those of our readers who intend to take part in the proceedings of the Clinical Meeting of the British Medical Association to the fact, unfortunately too well known to metropolitan dwellers, that it is exceedingly difficult to find house-room in London, while private hospitality has been curtailed through the difficulty of finding adequate domestic service. Those who intend to be present at the meeting should take the earliest steps possible to obtain accommodation. In the meantime Sir ARTHUR STANLEY, treasurer to St. Thomas's Hospital, has come to the rescue in a very practical manner. In the event of members of His Majesty's Forces and others attending the Clinical Meeting of the British Medical Association in London being unable to obtain sleeping accommodation, the treasurer and governors of St. Thomas's Hospital have set aside 60 beds in two vacant wards, and they will be able to provide breakfast for their guests. Early application should be made to the honorary general secretaries of the Special Clinical Meeting, 429, Strand, W.C. 2.

Annotations.

"Ne quid nimis."

MINIMUM FOOD REQUIREMENTS.

THE food requirements of man and their variations according to age, sex, size, and occupation are dealt with in a report issued last week by the Food (War) Committee, Royal Society, and couched in simple terms such as should be easily grasped by the lay reader. It presents no new contributions on the general questions of nutrition, showing rather how very inadequate is our present knowledge of the science of nutrition, and demonstrating the necessity, in the opinion of the writers, of renewed investigations of almost every point discussed. The document, however, is valuable in setting out the views of our leading authorities on the subject, and such calculations as are included are all based on scientific data so far as they exist. Thus at the outset the constituents of food are defined, and later their rôle in metabolism; next follows a section on food requirements of the average man and influence of external temperature, on the relation of requirements to size and weight, and on the requirements of women, children, adolescents, and brain-workers of every sort. It is pointed out that the growth vitamin is present in especially large quantity in the fats of milk, and that on this account, if on no other, milk is of vital importance for the nourishment of children, no child's diet being considered satisfactory in which milk or milk fat is not present. Examples of foods deficient in growth factors are quoted, and amongst these are mentioned white bread, polished rice, the majority of patent breakfast foods, preserved meats, and preserved vegetables. The writers make some interesting observations on the needs of brain-workers. While the most careful experiments, they observe, have failed to show any increase in the energy output of the body as a direct result of brain-work, yet the quality of the brain-worker's diet requires more consideration than that of the bodily labourer. The former cannot digest fats and carbohydrates in excess of his muscular requirements, and in a cold climate may suffer from defective heat production. In such a case a

relatively high protein diet, it is suggested, is of advantage, since protein alone among food-stuffs directly stimulates the oxidative processes of the body, and therefore by its mere ingestion increases the heat production in the body. Greater outlay on the relatively expensive animal foods is therefore justified for the brain-worker. Finally, the effects of a general diminution of the food-supply on the population is discussed, and reference is made to the effect of a course of semi-starvation as studied by Benedict. Put in a sentence, he showed that it is possible for large masses of men to live and to carry on their normal employment on a diet very much less than that to which they were accustomed.

The food situation as it has recently affected Switzerland was discussed at a meeting of the Basle Medical Society on Jan. 31st, Dr. Ernst Hagenbach presiding. Dr. Gigon, who introduced the subject, started from the conventional daily standard or *Normalkost* of albumin 90 to 130 g., fat 60 to 100 g., carbohydrate 400 to 550 g., total calories 2900 to 3300. Recent Swiss experience has led him to regard these figures as optional and to fix the daily minimum proper to a hygienic existence at albumin 70 to 80 g., total calories 2300 to 2500, but this, he thinks, would mean privation if continued over a period of more than two to three years. While in Basle itself the total calories available per head of population had diminished from 3180 in 1912 to 2300 in 1917, principally through diminution in fat and carbohydrate, the manual worker did his utmost to keep his albumin ration at its previous height in spite of the enhanced cost, and in most cases he lost weight in so doing. Dr. Gigon suggested that when in any country rationing of a particular foodstuff became necessary it was essential to ration all foodstuffs in order to ensure fair distribution of those remaining unrationed. Experience in this country has certainly confirmed the wisdom of the suggestion. For patients he would like to see a special system in force; diabetics, for instance, being granted 50 g. of butter in place of sugar, bread, and milk; cases of kidney and heart disease to be allotted extra sugar, potato, and rice; and a quantity of milk—half a litre of milk would suffice—being assigned to each hospital bed. Professor Staehelin, and others who followed Dr. Gigon in the debate, confirmed the impression that the Swiss pre-war consumption of albumin had been more than sufficient for physiological needs, and that no appreciable evidence of hypo-nutrition had yet shown itself on the reduced diet.

MENINGEAL HÆMORRHAGE IN TYPHOID FEVER.

At a meeting of the Société Médicale des Hôpitaux of Paris M. Emile Sergent and Mlle T. Bertrand reported a case of a very rare complication of typhoid fever—meningeal hæmorrhage. A married woman, aged 35 years, was admitted into the Charité Hospital on July 11th, 1918, for an illness of 10 days' duration, marked by lassitude, insomnia, vomiting, and, above all, by violent headache, which gradually increased. On admission she was prostrate and immobile, the face was covered with perspiration, the features were drawn. She complained of violent headache, but there was no rigidity of the neck and Kernig's sign was absent. The temperature was 102.2° F. and the pulse 104. The tongue was furred and the abdomen tympanitic. There was bilious vomiting, but neither constipation nor diarrhoea. The spleen was enlarged and

palpable. In the chest sonorous and sibilant râles were heard. The general condition became worse, the temperature rose to 104.9°, and Kernig's sign with rigidity of the neck and spine appeared. Meningitis was suspected. Lumbar puncture yielded hæmorrhagic fluid, not under increased tension. Bacteriological and cytological examination of the fluid showed only the presence of normal blood. The cause of the hæmorrhage remained obscure until July 15th, when Widal's reaction was found positive and the typhoid bacillus cultivated from the blood. On the 18th defervescence began. On the 20th lumbar puncture yielded limpid fluid, of which only the last drops were hæmorrhagic. Bacteriological and cytological examination were still negative. From this time the patient improved gradually and the rigidity diminished. On the 24th lumbar puncture yielded normal fluid. Meningeal hæmorrhage does not appear to have been described as a separate complication of typhoid fever, though it is mentioned as one of the phenomena of hæmorrhagic typhoid. Meningeal complications of typhoid fever are fairly common and well known, but they take the form of meningitis with a more or less marked leucocyte reaction of the cerebro-spinal fluid, in which the typhoid bacillus can be found, or of "meningism," which shows itself only by functional troubles, the cerebro-spinal fluid being normal. This meningism is associated with a congested state of the meninges. M. Sergent and Mlle. Bertrand suggest that this in their case brought about the hæmorrhage, thus comparing it with the epistaxis, metrorrhagia, and early intestinal hæmorrhages of typhoid fever, which are due respectively to congestion of the nasal, uterine, and intestinal mucous membranes.

SUSCEPTIBILITY TO ENVIRONMENT.

In the first special hospital arranged in this country for officers suffering from functional nervous disturbances the patients were at first placed in "austere little rooms," with plain, grey walls, devoid of pictures or ornaments, and with nothing to attract or distract the attention of the tired man. In such a quiet haven, we were then told, fatigue, as a rule, passed off rapidly and convalescence began. The effect of this environment on the sick man's nervous system was thus duly recognised. But it is self-evident that this effect is a very varying quantity. The nature of the surroundings in which people work or play is of far more importance to some than to others, and the most susceptible people are not always those who are "nervy," or who possess the artistic temperament in high degree. It is doubtful, too, how long, even in extreme cases, the normal daily environment continues to be operative. The attendants at the National Gallery soon get over the effect of living among the old masters. Wall-papers with startling patterns have been known to irritate patients convalescing from acute illness, but it must be possible to live within the deplorable wall-papers seen in the tradesman's book of samples without the loss of reason, or our asylums would be fuller than they are. It is difficult to suppose that the widely advertised colour scheme which is on its trial in a section of the Maudsley Hospital can be any exception to this law of rapid habituation to environment. Dr. E. N. Snowden, who gives a report upon the scheme on another page, states that there is less crime in the military sense in the section so

decorated than in any of the other wards of the hospital; but he rightly goes on to suggest other possible explanations of this observation—e.g., coincidence, the tact of the sister-in-charge, the pride induced by living in a show ward, and so on. Moreover, the effect of suggestion cannot be overlooked; a patient with neurasthenia lost his headache after living in the purple room in which he had been told that his headache would disappear. The same thing would possibly have happened if the presence of venetian blinds or the smell of hyacinths in the room had been the curative factor emphasised. We agree with Dr. Snowden's conclusion that a happily decorated hospital must be a more cheerful place to live in than one that is decorated with the usual dull colours chosen for utility and economy; but much more evidence of the curative value of a particular colour scheme is required before any conclusion can be drawn upon its merits.

DOES EPIDEMIC INFLUENZA AFFECT THE LOWER ANIMALS?

IN former days there was a general impression that influenza when epidemic in man spread to some of the lower animals, such as the horse, for example. In more recent times this view was considered to be untenable, and it has to be admitted that little evidence of any scientific value has ever been brought forward to support the contention that any of the domestic animals were susceptible to the disease. During the course of the present pandemic the question has again been raised, chiefly in the lay press. A Central News message, published in a London newspaper on Nov. 1st, 1918, from Johannesburg, mentioned that "an extraordinary development" of the influenza epidemic, then raging in South Africa, had been the excessive mortality that had occurred among the African monkeys. Reports from areas in which these animals abounded stated that the monkeys were "dying in hundreds," and that in some places whole troops of baboons had been found dead, the result apparently of "pneumonic complications." These statements were supplemented by the Cape Town correspondent of the *Times* on Nov. 5th, who said that influenza had spread to baboons, of which a large number existed in the kloofs and hills around Magaliesburg, in the Transvaal. These animals were "dying in scores" and their dead bodies were being found on the roadsides and in the vicinity of homesteads, the epidemic having apparently led them to forsake their usual haunts. Recent experiments in France, conducted by British research workers, have proved that influenza can be transmitted to monkeys by the inoculation of infective material; so that it may be concluded that these animals are susceptible to the disease, but whether they can contract it also in the natural way is not yet clear. Reports from Canada, at the end of 1918, stated that woodmen employed in clearing the bush in Northern Ontario had observed an unusual mortality among moose, and this they believed to be due to the current influenza epidemic. The *Times* of Jan. 10th supports this statement and says that in Northern Canada influenza was "decimating the big game," and that for some time smaller animals had also shown marked symptoms of the disease. The *Times* of Feb. 20th contains a communication from its correspondent at Butte, Montana, mentioning the fact that the Yellowstone National Park, in which bison, elk, and other animals are strictly preserved by the United States

Government, had been "swept by an epidemic of influenza," and that already 31 "buffaloes" had been found dead as a result. On March 10th it was reported by the *Times* that a veterinary surgeon at Kirkby Stephen, who was inspecting officer for the Westmorland County Council and for the Board of Agriculture, had lately observed an epidemic illness among sheep in the district, and that he had diagnosed it as "influenza"; it was also stated that this veterinary surgeon during his 30 years of professional life had never, till now, met with an outbreak of a similar kind. Several flocks were at present affected, and many sheep had died as a result of the epidemic.

It cannot be said that in any of the above-mentioned instances have definite proofs been brought forward to show that these outbreaks were caused by epidemic influenza. It is difficult to understand how wild animals like the moose or the bison could primarily get infected by influenza. With domestic animals it is conceivable that they could get infected by their human owners or other persons attending to them. It seems desirable that, when suitable opportunities occur, some careful investigation of alleged outbreaks of influenza in the lower animals should be undertaken, and especially of such occurrences among domestic animals like the dog and the cat, which are in more intimate association with man. Such investigations might settle the question, once and for all, whether the lower animals are really susceptible to influenza, and whether, if attacked, they are capable of transmitting the infection to man or to other species of animals.

FEEBLE-MINDEDNESS FROM TWO STANDPOINTS.

SOONER or later, it may reasonably be anticipated, a Ministry of Health will take over all the powers and duties of the Local Government Board, the Home Office, and the Board of Education, in regard to lunacy and mental deficiency. When that time comes there will arise some pretty problems in harmonising the practice of the different departments. As an illustration there may be taken the different attitudes adopted by the Local Government Board and the Home Office towards the less marked degrees of mental defect which are covered by the term "feeble-mindedness." Under the Lunacy Act, 1890, certain classes of lunatics, not defined exactly but in practice comprising the quiet and harmless insane, together with imbeciles and idiots, can be received into workhouses by means of a much simpler procedure than applies in the case of asylums. For detention two medical certificates and an order under the hand of a justice are required, but the justice need not see the patient if he does not think it necessary, and the order is valid, without renewal, for an indefinite period. Following out this principle of imposing less exacting conditions in less marked cases of defect the Local Government Board, through the instrumentality of orders made in 1897 and 1911, allows feeble-minded persons under the age of 21 and chargeable to London parishes to be received into the institutions controlled by the Metropolitan Asylums Board without any order made by a justice, if an application supported by the guardians' medical officer is made by their clerk. Under the Mental Deficiency Act, 1913, the tendency is to increase the stringency of the conditions regulating admission to an institution as the intellectual status of the patient rises. The feeble-minded person, like the idiot or

imbecile, may be dealt with either by means of an order made by a justice, after the presentation of a petition, a statement of particulars, a statutory declaration, and a couple of medical certificates, or, if below the age of 21, as the result of an application by his parent or guardian. In this latter case, however, there are required not only two medical certificates but also two certificates by "a judicial authority." The contrast in methods does not end with the reception of the patient. Cases under the Mental Deficiency Act have to be seen from time to time by visiting justices, reports about them have to be sent to the Board of Control, and, generally, they are responsible for the consumption of much paper and ink. Local Government Board cases carry on quite satisfactorily without these refinements. There is no authority for their detention—they simply stay. It is rather striking to find in one institution and in the same ward of the institution two patients of similar type yet under such diverse conditions. We are not, at the moment, concerned to point the moral, but the situation is worthy of the attention of those who may have to reconcile the vagaries of the law relating to mental defect.

INTESTINAL ENTOZOA AMONG THE NATIVE LABOURERS IN JOHANNESBURG.

THE South African Institute for Medical Research has recently published an interesting report by Miss Annie Porter, D.Sc. Lond., parasitologist to the Institute, entitled "A Survey of the Intestinal Entozoa, both Protozoal and Helminthic, Observed Among Natives in Johannesburg from June to November, 1917."¹ The natives employed in Johannesburg are gathered from various parts of Africa, including the East Coast, Cape Province, the Transvaal, Basutoland, and Natal, and among them infestation by endoparasites, both protozoa and helminths, is common. As many as six kinds of parasitic organisms have been found simultaneously in a single intestine. The parasitic protozoa found in the stools of the natives include *Entamoeba histolytica*, *Giardia intestinalis*, *Trichomonas intestinalis*, and *Chilomastix mesnili*; the first of these is associated with amoebic dysentery and the last three with various flagellate diarrhoeas; and *Isospora bigemina*, which can cause coccidial diarrhoea. *Entamoeba coli* and *Spirocheta eurygyrata* are very widely distributed parasites; they have long been habituated to life in the human intestine, but nevertheless it has been found that they multiply more abundantly in an unhealthy intestine, and their presence in large numbers may serve as an indication of intestinal disorder. Miss Porter regards the number of infections with *E. histolytica* as some index of the number of sporadic cases normally present among a population living under normal conditions; and also as an indication of the possibilities of amoebic dysentery occurring in epidemic form should conditions of living lower the standard of health now prevailing. It is suggested that under less favourable conditions it is possible for diseases, now relatively quiescent and sporadic, to become fulminating and epidemic. The main modes of transmission of *E. histolytica* to man are by direct infection of food and water and indirectly by the agency of flies. Carriers of cysts are serious sources of danger to persons with whom they may associate. The same

remarks apply to such parasitic flagellata as *Giardia intestinalis*, *Trichomonas intestinalis*, and *Chilomastix mesnili*, each of which is capable of producing flagellate diarrhoea; each of them also is difficult of elimination from the alimentary tract when once established there. Distressing diarrhoea in adults and some forms of "green" or infantile diarrhoea in Johannesburg have been traced to the presence of these parasites, and with their elimination by treatment the diarrhoea has ceased. There is a possibility that many obscure intestinal troubles, difficult to deal with, may be due to these organisms. Natural reservoirs of these flagellates are found in such domestic vermin as rats, mice, and cockroaches, whose excrement may infect cereal or farinaceous food. The other source of infection is the cysts voided in the stools of human carriers. The danger from the promiscuous habits of some of the natives is evident; they may by their evacuations contaminate water and foliage, as well as afford opportunities for transmission of infection by flies.

Helminthic infections are widely distributed among the native workers of Johannesburg; eosinophilia and anaemia are common results of worm infestation, and generally lower the vitality of the infected person. For eliminating worm infections it is necessary to inculcate sanitary habits not only as regards the preparation of food but also with respect to the disposal of excrement. Numerous cases of infestation by *Tenia saginata* and *T. solium* were detected arising from the eating of imperfectly cooked beef or pork. The disposal of infected human excrement containing tapeworm eggs should be effected in such a way that no contamination occurs of herbage on which pigs or cattle may feed. By preventing the development of tapeworm eggs into bladder-worms in pigs and cattle, the development of tapeworms in man is rendered impossible. The presence of Hymenolepsis in man is the result of defective protection of food from contamination by rats and mice, the fleas infesting these animals conveying the bladder-worms to human food. Nematode infections in the natives were common, especially ankylostomiasis; *Ascaris lumbricoides* and *Trichuris trichiura* were also found frequently. A few cases of trematode infection were discovered—namely, *Schistosoma mansoni*. Miss Porter concludes her paper by saying that "No animal parasite is entirely harmless to man," so that neither protozoon nor helminth can be disregarded.

LARGER SCOPE FOR THE RED CROSS.

AN Inter-Allied Conference of Red Cross Societies will shortly be held in Cannes to consider the programme of a meeting to be called at Geneva 30 days after the signing of peace, for the purpose of extending the scope and broadening the basis of Red Cross work throughout the world. A number of important medical and surgical questions will come up at the Conference and require expert discussion; among those who have placed their services at the disposal of the British Red Cross Society for this purpose are Sir Arthur Newsholme, Sir Ronald Ross, Sir Robert Philip, Dr. F. N. Kay Menzies, Dr. F. Truby King, Sir Walter Fletcher, Sir Leslie MacKenzie, Colonel S. Lyle Cummins, and Colonel L. W. Harrison. As was pointed out by Sir Arthur Stanley in an address given before the Brighton Division of the British Red Cross Society on March 14th, wherever distress and suffering exist there the symbol of the Red

¹ Publications of the South African Institute for Medical Research. Edited by W. Watkins-Fitchford, M.D. Lond. No. XI. Pp. 58. 5s.

Cross should be. Numberless ways in which the Red Cross could help in the rebuilding of the world will suggest themselves, two of the most pressing needs being the prevention of tuberculosis and the promotion of child welfare. The suggestion has been made that some of the 1300 hospitals which are now being disbanded should be retained by the Red Cross for the treatment of tuberculous cases, along with the provision of proper home accommodation. The formation of a central council of child welfare under the presidency of the Red Cross Societies, coördinating all the efforts at present widely scattered, is engaging sympathetic consideration. In these and other ways the generous response of comfortable humanity to want and suffering, manifested during the war, will not be allowed to fade away in peace.

THE MEDICAL SUPPLEMENT OF THE MEDICAL RESEARCH COMMITTEE.

WITH reference to this publication we have been asked to call attention to the following statement of the Committee:—

"Since the end of hostilities the Medical Research Committee have had under consideration the question of continuing in another form the compilation of abstracts and reviews of foreign publications in medical science which, with a view to special war conditions, have hitherto been issued in the *Medical Supplement* to the *Daily Review of the Foreign Press*. The *Medical Supplement* as such will be discontinued after the April number, but representations have been made to the Committee from many quarters urging the continuation upon a permanent basis of a summary of a similar kind. It appears to have been found in many directions that the *Supplement* has served a useful purpose in aiding both the progress of research and its application to practical problems. The Medical Research Committee have made arrangements accordingly to publish in monthly issues periodical collections of abstracts and reviews of work done in the medical sciences and recorded either in British and American publications or in those of other countries. It is intended to leave a short interval between the cessation of the *Supplement* and the beginning of the new periodical, and it is hoped that the first number will appear on Oct. 1st next, at the beginning of the academical year. Its size will be a large 8vo, uniform with that (for instance) of the *Quarterly Journal of Medicine* and of an increasing number of other scientific journals. The contents will be in the form of abstracts of individual papers, with occasional critical summaries of grouped results, taken from published work making advance in particular branches of medical science."

A detailed prospectus of the new publication will shortly be prepared, when it will be sent upon application made to the Medical Research Committee, 15, Buckingham-street, Strand, W.C.2.

Sir Robert Jones will act as honorary consultant to the Ministry of Pensions for orthopaedic cases.

IN view of the impending retirement of Sir Horace Monro, K.C.B., Permanent Secretary to the Local Government Board, and in order to facilitate the unification of the departments which will be brought together in the Ministry of Health on the passage of the Bill now before Parliament, the President of the Local Government Board has appointed Sir Robert Morant, K.C.B., chairman of the National Health Insurance Commission, and Mr. John Anderson, C.B., secretary to that Commission, and at present acting as secretary to the Ministry of Shipping, to be additional Secretaries to the Local Government Board, with special functions and responsibilities in relation to the organisation of the new Department, continuing their Insurance functions. Sir Robert Morant and Mr. Anderson have been designated as First and Second Secretary respectively in the new Ministry.

REPORT ON THE KEMP PROSSOR COLOUR SCHEME.

BY E. N. SNOWDEN, M.B., B.S. LOND., M.R.C.S.,
CAPTAIN, R.A.M.C. (T.).

(From the Maudsley Neurological Clearing Hospital, R.A.M.C.)

THE Kemp Prossor colour method for treatment of neurological patients at the Maudsley Hospital is exhibited in the decoration of a section of the hospital—the officers' flat for 11 officer patients and Ward 4 for other ranks.

The following is a brief description of Ward 4 and serves to illustrate the whole scheme. The ward consists of three rooms. Room A is decorated with a ceiling of sky blue, with yellow walls (the so-called "sunlight" yellow). The bed-covers and locker curtains are green. It has blue flower vases and screen covers. The whole scheme of decoration is intended to represent spring, the yellow being said to be stimulating. Room B: The ceiling is blue, the walls yellow, the bed-covers and locker curtains are purple, and the screen covers are blue. This also is intended to be stimulating. Room C: The ceiling is blue, the walls are coloured, the upper part pink with a yellow dado. A narrow green line divides these colours. It has blue bed and screen covers. This scheme is intended to assist concentration. There are three chief side rooms: (1) Yellow and green, stimulating effect; (2) purple and blue, soothing effect; (3) yellow and blue, stimulating effect. The corridor is yellow and green.

Effects of Colour Scheme on Patients.

The colours are well chosen and the whole effect of the wards is bright and pleasing, if somewhat unrestful to the ordinary observer. With regard to the effect of this scheme of decoration on the patients, careful inquiry from the medical officers, sisters, and patients has elicited the following facts:—

1. There is less crime (in the military sense) in Ward 4 than in any of the other wards. This fact is of importance and needs further trial and investigation, as it appears to be a strong point in favour of the colour scheme. It may be mere coincidence. It may be due to the influence on the men of a tactful and suitable charge sister. A measure of the value of the sister's management in a neurological ward is the presence or absence of military offences. Further, it is possible that the men have a pride in the ward as being a show place, and their conduct consequently improves. If this last factor is of importance it would naturally disappear if the whole hospital were treated in the same way. These comments indicate a path for further investigation of the fact.

2. A patient diagnosed as "hysteria" was put into the purple side room. In two days he became hopelessly depressed and was removed to Ward A, where he recovered.

3. A patient with "neurasthenia" was told that his headaches would be removed if he were living in the purple room, and he stated that this occurred. I will comment on this fact later.

4. Two patients who were placed in Ward A (yellow) declared that they would go mad if they were left there. After two days this attitude of mind was changed to acquiescence with their surroundings. It is a common experience that we can become accustomed to any surroundings, and that the mind has the capacity of dissociating from consciousness any conditions that are unpleasant and by that means protecting itself from disturbance.

5. A young officer who had been unable to sleep for many nights unless with the help of sedative drugs while in France was placed in a room in which purple predominated. He slept soundly all night without any drug. This case has been quoted as an example of the soothing effect of the purple room, but any medical officer who has dealt with neurological cases can quote dozens of similar instances where the patient gave the credit for his improvement to the fact that he was back in England and his anxiety removed, and where there was nothing in his surroundings that was peculiar.

6. The patients who occupy beds in the pink room (C) show a tendency to sit there rather than in the other rooms.

7. Medical officers who have had cases under treatment in this ward, and in other wards simultaneously, find that there is no difference in the results achieved. The patients do not

get better more quickly in one than in the other, and the proportion of cured cases is the same.

Taking all these facts into consideration, it does not appear that the particular scheme of decoration here described has any more effect than would be achieved by any cheerful decoration chosen by an expert in the blending of colours. It is generally recognised that the effect of colour in our surroundings is a personal one, and except in the widest sense cannot be imposed upon us by another person successfully.

It is obvious that an unfamiliar decorative scheme may be utilised as a means of producing a state of suggestibility in a patient and assist in the removal of symptoms, as is instanced in a case mentioned under paragraph 3. This fact is capable of extensive use, but the result is not obtained by any virtue in the colour chosen, but by the suggestion which it is made to convey.

There can be no doubt that a happily decorated hospital must be a more cheerful place to live in than one that is decorated with the usual dull colours chosen for utility and economy, but it would be incorrect to state that the scheme of colours which is the subject of this report can in any sense replace the recognised psychotherapeutic methods to be employed in the treatment of the psychoneurosis.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Ministry of Health: Resolutions of the Scottish Medical Profession.

At a recent meeting of the medical profession in Edinburgh and Leith, called to consider questions in regard to the proposed Ministry of Health, resolutions were submitted to the following effect:—

(1) While approving of the establishment of a Ministry of Health, in view of the fact that such a Ministry is of primary importance to the medical profession, this meeting endorses the resolution of the Royal Colleges of Physicians and Surgeons, Edinburgh, that before the Bill is enacted it should be submitted to the medical profession for consideration.

(2) That there should be a separate Ministry of Health for Scotland with direct access to Parliament.

(3) That the Scottish Board of Health should contain not less than one-third of its members registered medical practitioners not holding any other appointment under the Ministry.

(4) That there should be a Medical Advisory Council elected by the medical profession itself, to which all matters directly or indirectly affecting public health should be referred by the Board for consideration and report. It should also be competent for the Advisory Council to submit such matters of its own initiation to the Board. This council should have power to meet jointly with any council, medical or lay, as occasion arises.

(5) That there should be representation of the dental profession on the Advisory Council.

All these resolutions were passed unanimously by the meeting.

Ministry of Health: Statement by the Royal College of Physicians of Edinburgh.

The Royal College of Physicians of Edinburgh has recorded its approval of the Government's action in giving a primary place to legislation in the interest of the health of the people, and of its intention to introduce a measure establishing a separate Health Ministry for Scotland. The statement goes on to lay stress on several points essential to the smooth working of a Health Act.

1. The College desires to emphasise the view that, whatever form the Ministry for Scotland may take, it is essential for the development of the Ministry that responsibility for the initiation and control of health measures applicable to Scotland should be vested ultimately in *one official*, specially appointed and responsible for this office only—whether as President or Vice-President of the Board of Health—who should be a Member of Parliament.

2. The College is of opinion that in constituting the Board regard should be had to the *selection of its members* on grounds of experience and interest in matters pertaining to health. This implies a larger medical membership than the Bill seems to contemplate. In view of the extent of the health interest involved, the proposed inclusion of one medical member is quite inadequate. Further, in the selection of medical members, it is undesirable to require the possession of one or other special diploma. The members should be chosen on the ground of their capacity and experience in medicine.

3. With regard to the *consultative councils* to be erected, the College favours the proposal. Their establishment will

tend to ensure the effective coöperation of the profession with the Ministry in the carrying out of preventive and curative measures, conducive to the health of the people. The College strongly recommends that the medical members of the consultative council should be chosen by the medical profession. Having regard to the extent and variety of questions which have arisen and will arise in connexion with a Ministry of Health, it is essential that these consultative councils should be really effective bodies, initiating as well as qualifying proposals, and that they should have ready access to the Minister.

The statement concludes with the expression of the belief that the establishment of consultative councils on these lines will be found capable of further development locally in connexion with the practical administration of the Act.

Post-graduate Medical Teaching in Glasgow.

In March, 1914, at a meeting of the medical teaching staffs of the University and other medical schools and of the general and special hospitals of Glasgow a committee was appointed to promote coöperation between the various bodies concerned and an executive committee was formed to complete arrangements and draw up a syllabus for the purpose of instituting a general scheme of post-graduate medical teaching early in 1915. In February of this year it was agreed to institute an emergency course of post-graduate medical teaching during the ensuing summer session, particularly to meet the needs of graduates who have been on service. Arrangements have now been made to carry out such a course in medicine, surgery, obstetrics, and special subjects, in various hospitals in Glasgow. The course, which will be clinical and practical, will be held during the months of May and June, 1919, and graduates may enrol for either or both months. Two schemes of teaching have been arranged.

Scheme A.—Graduates will be distributed among the clinics in the proportion of five or six to each, each graduate to have under his charge a certain number of beds and to be responsible for the due investigation and recording of the cases and for all special investigations in connexion with them, working directly under and along with the physician or surgeon in charge, and in connexion with the ordinary clinic.

Scheme B.—Special post graduate classes for graduates alone.

No fee will be charged for instruction under Scheme A, but for the special classes under Scheme B, there will be an inclusive enrolment fee of 5 guineas for the two months' course, and of 2½ guineas for one month. For this fee graduates may attend as many classes as they wish.

Further particulars may be had on application to the acting secretary, General Committee for Post-graduate Medical Teaching in Glasgow, Dr. A. M. Kennedy, Pathological Institute, Royal Infirmary, Glasgow. As certain of the special classes under Scheme B may be limited in numbers, and as the appointments under Scheme A are also limited to 6-8 to each clinic, graduates wishing to attend the course are advised to send their names to the acting secretary as soon as possible.

March 25th.

NEW YORK.

(FROM AN OCCASIONAL CORRESPONDENT.)

Prohibition and the Medical Profession.

PROHIBITION was discussed somewhat warmly at a meeting of the Medical Society of the County of New York held in the New York Academy of Medicine Building on the evening of Feb. 24th. It was not anticipated that the prohibition question would be taken under consideration at this meeting, as Dr. E. Elot Harris, chairman of the Committee on Public Health, had announced that the committee unanimously desired that no action be taken on the resolution by the society. The resolution as finally adopted was as follows:—

That the Medical Society of the County of New York opposes the ratification by the Legislature of New York of the measure now before it for national prohibition as irrational, unscientific, and in opposition to the accepted usage of all civilised nations elsewhere throughout the world, and as putting upon the medical profession the burden of prescribing and dispensing alcoholic beverages of proved therapeutic worth, while allowing the unlimited sale to the public of patent proprietary and quack remedies containing alcohol in varying amounts without control or hindrance by the officers of the State.

Among those who took part in the debate were Dr. Daniel S. Dougherty, secretary of the society, and Dr. Max

Einhorn, who took absolutely opposite views. Dr. Dougherty said, in part, that the arguments brought forward against prohibition, to the effect that in forbidding the use of alcohol personal liberty and freedom was interfered with, were mischievous. If no objection is made when a man's personal liberty is taken by restrictions on the use of morphine, why should there be objection to laws of a similar nature regarding alcohol? It was highly inconsistent to say that we must not prohibit such a menace to health as alcohol simply because we violate personal liberty. On the other hand, Dr. Max Einhorn asserted that alcohol contributed to health and enjoyment of life if moderately used. Prohibition was entirely against all our ideas of personal liberty. If alcohol was taken away coffee and tea might be prohibited. Then it might be decided that meat was harmful merely because some people were opposed to eating it. In America, as in all civilised countries, opinions of medical men are considerably divided with regard to prohibition.

Diphtheria in New York City.

The Health Commissioner of New York City, Dr. Copeland, issued recently a warning against the prevalence of diphtheria in New York, and announced that the Health Department was prepared to inject children and to immunise them against the disease. According to Dr. Copeland, there has been an increase in the number of cases of diphtheria each year, and even without this increase he points out that the disease is important when it is considered that there are about 15,000 cases and 1400 deaths, mainly among young children, each year. During February, up to the 24th of the month, there have been 1130 cases, as against 663 cases for the same period last year. The death-rate for February of this year so far has been 150 as against 95 in this month a year ago. The measures proposed by the New York Board of Health are, first, the employment of the Schick test, and if the test shows that the child or baby is susceptible to infection, the injection of a new, harmless immunising substance.

Sir Arthur Pearson in New York.

Sir Arthur Pearson spoke on the re-education of the blind before a mass meeting at the Century Theatre in New York City on the evening of Feb. 4th. Sir Arthur Pearson described the work being done at St. Dunstan's Hostel for Blinded Soldiers. Lieutenant-Colonel James Bordley, who is in charge of work for blinded American soldiers and sailors and director of the Red Cross Institute for the Blind, gave an account of the steps being taken at Evergreen, Baltimore, to render the men of the American Expeditionary Force who lost their sight in action happy and, as far as possible, self-supporting.

The Health Insurance Bill and the Medical Profession of New York State.

A considerable amount of opposition on the part of the medical profession of New York State is developing against a Health Insurance Bill which is now before the Legislature of New York State, and has been recommended for passage by the Governor in his message to the Legislature. On three previous occasions a Bill termed Compulsory Health Insurance has been before the New York Legislature, but on each occasion has been defeated. Dr. John P. Davin, of New York, who is the secretary of the Association for Medical Defence, and who has sent a letter pointing out the defects of the Bill to the medical and lay journals of the State, says that at an initial outlay of \$1,500,000 it would place upon the State Board of Health the duty of assuming charge of the working population of the State, as well as those who would apply to it for special advice or treatment. Dr. Davin characterises the proposal to enact such a health insurance law as a political attempt to put into practice the theory of the socialisation of medicine "at a time when the political socialisation of every other form of enterprise is falling into disrepute."

Feb. 28th.

SCOTTISH WOMEN'S HOSPITAL.—The Scottish Women's Hospital at Royaumont, which was started in 1914, has now closed its operations. During the four years of its existence 8752 French and Allied soldiers and 572 civilians have been cared for and 7204 operations have been performed. The hospital material has been sent to the Hôpital St. Sauveur, Lille, to replace equipment removed by the enemy.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENTS.)

Health in South Africa.

Sir Thomas Watt, in moving the second reading of the Public Health Bill in the House of Assembly, Cape Town, on Jan. 29th, said that both the war and the recent epidemic of influenza had tended to focus attention on public health. Recruits for military service in East Africa and Europe had had to pass a medical examination; out of 30,520 Europeans examined since Dec. 1st, 1917, 15,006, or 49·2 per cent., had been rejected. The principal causes of rejection had been (1) defective physique, (2) heart disease, and (3) defective vision. Of those examined some had been originally passed as fit, and after serving in East and Central Africa had publicly volunteered for service; after deducting 1035 of these who were rejected for malaria, the unfit percentage was 45·7. Since the same date 3354 coloured men and natives had been examined, of whom 999 were rejected, or 30 per cent. In other words, the country had lost the services of about 14,000 white and 1000 coloured volunteers. These results were sufficiently alarming and called for drastic measures to secure improvement. The war had caused the loss of 6395 white men and 692 coloured men killed, besides 1105 native members of the South African Labour Corps (in which are included 607 who were drowned in the *Mendi*), a total of 8192 lives lost through the war over a period of four years. In two months the influenza epidemic had carried off 11,726 Europeans, or 8·26 per 1000 of the population, and 127,450 natives and coloured people, or 27·19 per 1000. Among the new and salient features of the Bill are the establishment of a Ministerial Portfolio of Public Health and the organisation of one Central Health Administration to control and coördinate all health activities in the Union. Dr. J. C. MacNeillie said that two diseases required to be treated much more drastically in future, as they were a menace to the health of the Union. Syphilis was increasing rapidly, the number of cases varying from 25 per cent. of the natives of the Waterburg district of the Transvaal to 50 per cent. in other parts. Treatment should be on a national free basis, and the recently discovered drugs should be made available for the natives. The Government did not yet sufficiently recognise the gravity of tuberculosis. When he was in France on military service he had been present at post-mortem examinations on 160 South African natives, of whom no fewer than 130 had died from tuberculosis.

The Influenza Epidemic in Cape Town.

The medical officer of health for the city of Cape Town, Dr. A. Jasper Anderson, has drawn up a report to the Mayor and councillors on the influenza epidemic during September, October, and November, 1918, giving an account of the disease as it attacked Cape Town, and the measures taken to deal with it. It was not until the middle of the first week in October that he was aware of the prevalence of the disease in the city. On Oct. 3rd all schools were ordered to be closed; on Oct. 5th many cases were reported of people dying or being found dead in the streets. A special council meeting was held on Oct. 7th, and an executive and ladies' committee was formed. The ladies' committee supplied soup, milk, eggs, and other necessities, for in many households there was no one available to purchase and bring in food, and in many cases the usual distribution of meat, bread, milk, &c., could not take place. Advertisements were inserted in the newspapers for nurses and helpers; many volunteers were obtained, and house-to-house visitations were undertaken in the poorer districts. Retired medical men and professors in medical subjects at the Cape Town University, together with medical students, came forward to help.

A vaccine consisting of *B. influenza* 200 millions, streptococci 1000 millions, pneumococci 800 millions per c.cm. had been prepared in the Government Bacteriological Laboratory in Cape Town, and preventive inoculations of 0·25 c.cm. (4 minims) were at once instituted. He was not yet in a position to give definite figures as to the value of the preventive inoculations, but had formed an opinion that they were useful in prevention, and in mitigating the severity of the disease if it were contracted. He had no doubt as to its value in treatment.

At first, great difficulty was found in obtaining coffins and labourers to dig graves, the usual staff of the cemeteries being much affected with the disease. A special committee dealt with this matter. This shortage was overcome by the corporation workshops working day and night, by the assistance of the railways and harbours administration, and by orders given to different contractors. In this way 2000 coffins were provided gratuitously by the committee. The difficulty of providing labourers to dig graves was extreme and was not overcome until a number of men from a Nigerian regiment were supplied to assist.

Owing to the impossibility of obtaining medical advice it was decided to distribute medicine at the City Hall and the various depôts, and in this way to reassure the patients. A mixture containing 10 gr. of salicylate of soda and liq. ammonii acetatis was most appreciated by the patients. Aspirin tablets, gr. 5, were also used. A mixture of ammoniated tincture of quinine in 1 drachm doses was also distributed. An expectorant mixture containing ammon. carb., sod. bicarb., sodium salicyl., aa. gr. 5, tinct. nux vom. m 5; the same without sodium salicylate, and a tonic containing strychnine and dilute nitro-hydrochloric acid were added to the list. Epsom salts, camphorated oil, castor oil, linseed oil, tincture of iodine, cotton-wool, &c., were also available.

The city was divided into 45 areas, each being, as far as possible, in charge of a doctor. There was a depôt in each area which was placed under a controller, and here the volunteers and nurses who were undertaking house-to-house visitation reported serious cases of illness where medical attendance was needed, and messages from the public of the existence of such cases were also received. At the depôt foodstuffs and medicines were distributed, advice was given, and wants attended to. Hospital accommodation was provided. Military tents were supplied, together with a large staff of military orderlies, and marquees and bell-tents were erected at various places for the reception of patients. In addition to the two motor ambulances and one horse ambulance belonging to the municipality, many motor lorries (loaned by various mercantile firms) and two motor omnibuses were altered for the purpose. The serious cases were removed as rapidly as possible, considering the large number to be dealt with. Small bottles filled with disinfectant were distributed in order for disinfectant to be placed in spittoons, and the city engineer's department undertook the disinfection of the streets, pavements, and lanes of the city, and, later, the places of amusement before they were allowed to be reopened. Arrangements were made for the accommodation of children left destitute by the death of both parents, or the death of one, the other being in hospital. The Royal Automobile Club organised amongst its members a department of motor transport to carry food to depôts and to the houses of the sick, to carry supplies to the hospitals, and to convey workers round their districts and generally to help in the epidemic.

Dr. Anderson thought that fully half the European population and 75 per cent. of the coloured were affected during the epidemic. At the urgent request of medical practitioners the Minister for the Interior simplified the form for signing death certificates, and, in cases of death where a medical man had been unobtainable, ministers of religion, the police, and controllers of depôts were allowed to give certificates if the death was obviously due to the disease. From Oct. 1st to Nov. 15th there had been 660 deaths of European males and 450 European females, total 1110; during the same period 1875 coloured males had succumbed and 1317 females, total 3192, the total deaths from the epidemic up to Nov. 15th being 4302. In spite of difficulties owing to the want of a definite diagnostic sign and the confusion which exists between ordinary colds and influenza, Dr. Anderson recommends that this disease should be made notifiable, so that the earliest information of its existence can be obtained and a careful examination made of the sputum and of naso-pharyngeal swabs. In his opinion, notification in inter-epidemic periods would be useful; as soon as an extensive outbreak occurred this could be dropped and reliance placed upon house-to-house visitation.

Dr. Anderson's Main Recommendations.

Dr. Anderson makes certain recommendations with regard to the remedy of defects either known to exist or which have been found during the epidemic, and which will help

in preventing its recurrence and leave the municipality prepared should an outbreak occur.

1. Overcrowding was one of the greatest difficulties which had been met with, for it was no use turning people out of one overcrowded house to overcrowd another, and for humanitarian reasons they could not be turned into the streets. Since the epidemic the council have decided to ask authority from the ratepayers to spend a further sum of £250,000 over and above the £50,000 already granted for the erection of about 122 houses for municipal employees, which, in the same ratio, would supply about 610 houses to accommodate about 3000 people. Every encouragement should be given to firms to build houses for their employees, either singly or by combination. The Government ought at least to house its own employees. If a public utility company could be formed for the purpose of building houses of this class, the interest on the money invested not to exceed 6 per cent., a valuable addition to the means for overcoming the scarcity of houses would be created. A scheme is under consideration of the council for advancing money to enable persons desiring to build houses on land in their possession or to let sites on municipal land on leases of 99 years. Efforts are being made for the introduction of an ordinance in the next session of the Provincial Council to authorise loans for this purpose, the total amount not to exceed 75 per cent. of the expenditure. The present intention is not to advance loans on a house proposed to cost more than £600, and that no advance be made to a person whose income exceeds £30 per mensem.

2. Provision is necessary for the supply of medical outdoor relief to those people who are too poor to pay for medical attendance, a system which prevails in England. Many people who are not paupers cannot afford to pay for medical attendance, and provision should be made for their medical care. A well-considered Poor-law is urgently needed.

3. Increased general hospital accommodation should no longer be delayed. The plea that there is no money should not be allowed to exercise influence, because apart from the loss of valuable lives these epidemics cause great expense to the community not only in actual expenditure, but in loss to business generally. The additional pavilion already asked for in the estimates of next year should be erected without delay. A number of marquees of the E.P. pattern would be found of service in case of need.

4. A system of lectures and instruction in home nursing would be useful, the instruction to be as practical as possible. Homely lectures might be delivered by the health visitors in the poorer districts whenever the disease threatened to recur; the use of handkerchiefs in preventing the spread of the disease, and the value of nasal douches might be pointed out, and warning should be given against spitting on pavements, floors, and public places.

5. Influenza and pneumonia in an inter-epidemic period should be made compulsorily notifiable.

6. The male inspectors should be increased from 16 to 24, and a chief sanitary inspector appointed. Some sections of the community required their ideas of cleanliness considerably raised. The number of female inspectors, therefore, should be increased from 5 to 11 and include a woman chief inspector to supervise the work. One of the principal duties of these inspectors would be to instruct housewives on the cleanliness of the house and see that regulations were carried out.

7. An additional medical assistant might be appointed to assist in investigating suspect cases of influenza and other special infectious cases. Besides this he thought it would be necessary to have an organisation ready to deal with a widespread epidemic, and to be called into operation as soon as required. In each ward there should be appointed a central depôt, and the councillors of each ward should form a committee to manage the same and prepare a list of voluntary helpers from those who have gained experience during the present epidemic. Each ward should be divided into blocks of houses, so small that a helper could visit the houses in that block daily.

8. The medical officer of health should be kept informed of the existence of disease on all steamers arriving in the bay, so that he may be on his guard against any disease being introduced in that manner.

9. Preventive inoculations should be made as soon as there is any evidence of cases of the disease in the city or in the Union of South Africa.

Household Refuse.

Dr. A. W. Reid, assistant medical officer of health for Cape Town, urges the revision of the present system of the removal of house refuse. Only that which can be placed in the receptacle, usually a paraffin tin, is removed free of cost. Anything beyond that must be paid for at the rate of about 3s. for removal by cart. Many householders cannot afford this, the consequence being that quantities of dirt and garbage of a decomposable nature accumulate in houses. For instance, sacks are filled with chaff and used as mattresses. When these become filthy or verminous the sanitary inspector orders them to be removed or destroyed. As a rule, they are carried sometimes for long distances and deposited in a public or private lane or by-lane, on open ground, or into other backyards, vacant or occupied. He suggests that, as already mentioned, all household refuse, especially in the poorer districts, should be removed free of cost to householders. If this cannot be undertaken a monthly cleaning up on the lines at present carried out should be enforced. That dealing in and consequent accumulating of second-hand scrap-iron, &c., be made a legal offence, except by licence and in approved premises. That contractors or jobbers be prohibited from storing iron or stoneware pipes, tanks, baths, or other utensils, new or second-hand, except in approved places, and that the keeping of poultry in town, except by permit, be prohibited.

Alleged Medical Profiteering.

In the Union House of Assembly at Cape Town, on Feb. 27th, two Free State deputies complained of certain medical practitioners charging exorbitant fees for professional services during the influenza epidemic. Though the members of the profession as a whole had worked most nobly and unselfishly and without thought of reward, there was, unfortunately, another side to the case. Mr. J. Brand Wessels, a Free State Member, said that in one instance a doctor coming from the Rand had claimed as much as £200 per day. Another Member quoted the case of a doctor who had charged £405 for nine visits. Sir Thomas Watt, the Minister of the Interior, said that he had been asked to draw up a tariff for medical men. Something ought to be done to avoid exorbitant charges in the country districts, but he did not see how they could compel practitioners to attend patients at a great distance. He would try to arrange for attendance by the local district surgeon.

March 1st.

THE SPECIAL CLINICAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: APRIL 8th to 11th.

THE special clinical and scientific meeting of the British Medical Association will be held, as already announced, in London, from April 8th to 11th. The arrangements have been made by a committee of which Sir T. Clifford Allbutt is chairman, and which includes the Presidents of the English Royal Colleges, Sir William Osler, the Directors-General of the Medical Departments of the Royal Navy, of the Army Medical Service, of the Army Medical Services, France, and of the Canadian Army Medical Service, the Director of Medical Services of the Australian Imperial Force, representatives of the medical services of New Zealand and South African Overseas Forces, the Medical Adviser to the Secretary of State for India, and the Medical Administrator, Royal Air Force.

Meetings of the sections will be held in the Imperial College of Science, South Kensington, London, S.W.

A popular lecture on the Surgery of the War will be given by Mr. Cuthbert Wallace, Maj.-Gen., A.M.S., Sir John Goodwin, D.G. A.M.S., occupying the chair.

An exhibition of surgical instruments, hospital furniture, drugs, foods, sanitary appliances, &c., will be held in the Physics Examination Hall, Imperial College of Science and Technology, South Kensington, from Wednesday, April 9th, to Friday, April 11th.

A reception arranged by the Metropolitan Counties Branch of the British Medical Association will be held at the Guildhall, London, on the evening of Tuesday, April 8th, when the guests will be received by Sir T. Clifford Allbutt, as President of the Association. The President of the Royal College of Surgeons will hold a reception at the

College, Lincoln's Inn Fields, on Wednesday, April 9th, from 4.30 to 6 P.M., when there will be an exhibition of Hunterian and Listerian relics. On the same evening the Royal Society of Medicine will hold a conversazione at 1, Wimpole-street, W., Sir Humphry Rolleston, President of the Society, acting as host. The President and officers of the Royal College of Physicians of London will receive members who would like to see the portraits and books at the College on Thursday, April 10th, at 4.30 P.M., and at 6 P.M. Sir Humphry Rolleston will give a Lumleian lecture on cerebro-spinal fever in the Library. On Thursday evening, April 10th, members will dine together at the Connaught Rooms.

The General Secretaries of the meeting are: Mr. Cuthbert Wallace, Dr. Gordon Holmes, Mr. S. Maynard Smith. Address: Room 46A, 429, Strand, London, W.C.2.

Programme of Sections.

The Chairman of the Programme Subcommittees is Professor J. G. Adami, Pembroke House, 133, Oxford-street, London, W.1.

The programme will be divided into three sections:—

(1) Section of Medicine.

War Neuroses (Wednesday, April 9th, 10 A.M. to 1 P.M.).—Chairman: Sir David Ferrier. Introducer: Dr. F. W. Mott. A discussion will follow.

Influenza (Thursday, April 10th, 10 A.M. to 1 P.M.).—(In conjunction with the Section of Preventive Medicine and Pathology.) Chairman: Col. Haven Emerson, M.C., U.S.A. The subject will be treated under the following headings: 1. Clinical Aspects. Introduced by Sir Wilnot Herringham. (a) Short account of epidemics of 1918 in France. Contrast between clinical features of spring and autumn epidemics—for example, respiratory complications. (b) Epidemic in England. Contrasts and resemblances to above. 2. Epidemiology. Introduced by Dr. M. Greenwood. 3. Etiology. Introduced by Maj. F. B. Bowman, C.A.M.C. N.B.: The pathological aspects will be treated by means of demonstrations.

Veneral Disease (Friday, April 11th, 10 A.M. to 11.30 A.M.).—Chairman: Sir William Osler. The subject will be introduced by Col. L. W. Harrison. A discussion will follow.

Prognosis in Cardio-vascular Affections (11.30 A.M. to 1 P.M.).—Chairman: Sir James Mackenzie. Introducer: Dr. Thomas Lewis. A discussion will follow.

Demonstrations beginning 2.30, Wednesday, April 9th: Neurological Cases, National Hospital for Paralysis and Epilepsy, Queen-square; Diseases of the Chest, Brompton Hospital; Mine Gas Poisoning, Lieut.-Col. D. Dale Logan. Thursday, April 10th: Newer Methods in Cardio-diagnosis, National Heart Hospital, Westmoreland-street, Marylebone; Cases and Specimens Illustrating Cardio-vascular Disease, Dr. Thomas Lewis, at University College Hospital; Drawings of Throat in Various Acute Infectious Diseases, Dr. H. Drinkwater, at St. Thomas's Hospital. Friday, April 11th: Air Force Tests at Royal Society of Medicine; War Neuroses, Dr. F. W. Mott, Maudsley Clearing Hospital, Denmark Hill, and Cinematograph Demonstration by Dr. A. F. Hurst; Diseases of Children, Hospital for Sick Children, Great Ormond-street. On each day there will be a demonstration on Veneral Disease by Col. L. W. Harrison at the Military Hospital, Rochester-row. Secretaries of Section: Col. O. T. C. de Crespigny, A.A.M.C., Col. R. J. Millard, A.A.M.C.

(2) Section of Surgery.

Discussions in the morning.

Gunsnot Wounds of the Chest (Wednesday, April 9th).—Chairman: Sir George Makins. Introducers: Dr. T. R. Elliott and Mr. G. E. Gask.

Wound Shock (Thursday, April 10th).—Chairman: Sir Anthony Bowlby. Introducers: Prof. W. M. Bayliss, and Dr. H. H. Dale.

A Review of Reconstructive Surgery (Friday, April 11th).—Chairman: Sir Robert Jones. Introduced by Mr. R. C. Emslie and Mr. W. R. Bristow.

Demonstrations beginning 2.30 P.M. Wednesday, April 9th: (1) On Orthopaedic Methods, &c., at the Military (Orthopaedic) Hospital, Shepherd's Bush; (2) Bone Inflammation and Bone Repair, by Prof. J. G. Adami for Major Rhea, C.A.M.C.; and (3) Specimens Illustrating Wounds of Arteries, by Sir George Makins, at the Royal College of Surgeons. Thursday, April 10th: (1) On Facial Injuries, at Sidcup; (2) at 3.15 P.M., Cinematograph Lecture on a Hospital for Limbless Cases, by Sir John Lynn-Thomas, at the Imperial College; (3) Specimens illustrating Fractures of the Skull, by Prof. A. Keith, at the Royal College of Surgeons; (4) at 4 P.M., Cinematograph Lecture on Fractured Femurs, by Maj. Pearson, C.A.M.C., at the Imperial College; Friday, April 11th: (1) On Orthopaedic Methods, &c., at the Military (Orthopaedic) Hospital, Shepherd's Bush; (2) War Injuries of the Eye, by Mr. W. T. Lister; and (3) Specimens illustrating Gunshot Wounds of the Abdomen, by Mr. C. Wallace, at the Royal College of Surgeons. Secretaries of Section: Mr. C. H. S. Frankau and Mr. O. Max Page.

(3) Section of Preventive Medicine and Pathology.

Discussions in the morning.

The Dysenteries: Bactlary and Amabio (Wednesday, April 9th, 10 A.M. to 1 P.M.).—Chairman: Col. S. L. Cummins, A.M.S. Introducers: Dr. L. S. Dudgeon and Prof. W. Yorke.

Influenza (Thursday, April 10th, 10 A.M. to 1 P.M.).—Joint meeting with the Section of Medicine.

Malaria (Friday, April 11th, 10 A.M. to 12 (noon)).—Chairman: Sir Ronald Ross. Introduced by Lt.-Col. S. F. James, I.M.S. A demonstration on malaria and an exhibition of specimens, arranged by Sir Ronald Ross.

A communication will be made on a "Filter-passing" Virus in certain diseases, with especial reference to Polynuria, Knoch's, Trench Fever, Influenza, and Nephritis, by Sir John Rose Bradford, Dr. E. F. Bashford and Dr. J. A. Wilson (12 (noon) to 1 P.M.).

Demonstrations at 2.30 p.m. Wednesday, April 9th: On Malaria by the London School of Tropical Medicine, at Endsleigh Palace Hotel, Gower-street, W.C.1. Thursday, April 10th: On the Pathology of Dysentery, at St. Thomas's Hospital, Albert Embankment. Friday, April 11th: On the Anaerobic Bacteria which Infect Wounds, and on the subject of Filter passing Viruses in Influenza and other Diseases, and Rickettsia Bodies; at the Lister Institute of Preventive Medicine, Chelsea Gardens.

Secretaries of Section: Dr. J. A. Arkwright and Maj. A. M. W. Ellis, C.A.M.U.

The War Collection of Pathological Specimens from the seat of war in France will be on view daily from 10 to 6 (on Saturday 10 to 1) at the Royal College of Surgeons, Lincoln's Inn-fields, W.U.2. It comprises a large and complete series of gunshot fractures of the bones; and another series, equally complete, of gunshot injuries of the different organs and soft structures, as well as specimens of disease incident to warfare, the effects of gassing, trench nephritis, gas gangrene, &c. The entire collection is systematically arranged, and each preparation is furnished with a brief description and history. Three demonstrations have been arranged, to be given from 3.30 to 4.30 p.m.:—Sir George Makins: Injuries of Arteries (Wednesday); Prof. Arthur Keith: Fractures of the Skull (Thursday); Mr. C. S. Wallace: Abdominal Injuries (Friday).

CENTRAL MEDICAL WAR COMMITTEE: ITS WORK IN DEMOBILISATION ENDED.

At a meeting of the Central Medical War Committee, held on March 21st, the following letter, dated March 19th, from the Ministry of National Service, addressed to the chairman of the Committee, was read:—

I am directed by the Minister of National Service to inform you that, in view of the fact that a more general demobilisation of medical officers from the Royal Army Medical Corps is now understood to be imminent, it has been decided to discontinue the functions of this Ministry in the selection and nomination of medical officers for release for the Service Departments concerned. This decision will take effect as from the 1st April next.

It follows that such responsibility as this Ministry has hitherto undertaken in regard to the safeguarding of the Medical Service throughout the country, and which it has been able to exercise by means of its powers and functions in connexion with the demobilisation of medical officers, will cease on the same date.

You will appreciate that this decision does not affect the position of your Committee as a medical tribunal, so long as the Military Service Acts and the Military Service (Medical Practitioners) Regulations, 1918, remain in force. Steps are being taken to terminate on or about the same date the arrangements which have been in force in regard to secretarial and clerical assistance.

It will be remembered that at the request of the Ministry, and in consultation with it, the Committee drew up a scheme for demobilisation of medical men on personal grounds, which was based primarily on length of service and age with due consideration for special claims which might be put forward. The Secretary of State for War has stated that the Ministry of National Service had agreed with the War Office that the restricted procedure of selection of individuals for release should be discontinued. It follows from this that the Central Medical War Committee is no longer in a position to secure the release of doctors either on public or private grounds, and that in future their demobilisation will be regulated solely by the consideration of whether the War Office can dispense with their services.

On receipt of the above letter the Committee came to the conclusion that its duties as advisory body to the Ministry of National Service were necessarily terminated, and it was stated by representatives of the Royal Colleges present that the Committee of Reference had decided to adjourn sine die. The Scottish committee, it is understood, will in due course issue its own statement.

National Work of Central and Local Medical War Committees.

The following letter has been received by the Chairman of the Central Medical War Committee, dated March 24th, from Sir Auckland Geddes, Minister of National Service; and its message has been conveyed to the Local Medical War Committees with an expression of thanks from the Central Medical War Committee for the devoted and public-spirited work which they have carried on for the past four years in

the interests of their professional brethren and of the country:—

Now that the functions of the Ministry of National Service are terminating, I wish to express to you my high appreciation of the services which the Central Medical War Committee and its Local Medical War Committees have rendered in association with my Medical Department. These services have been continuous and often arduous, but they have been of very real value and assistance to the work of the Ministry.

I have always felt that through the Central Professional Committees, with their local organisation, my Medical Department has been able to keep in touch with the medical situation throughout the country, and with the needs and views of the profession itself, in a manner which has greatly facilitated its administrative work.

I shall be grateful if you will convey my own personal thanks and the thanks of the Government to the members of the Central Medical War Committee, and also to the Local Medical War Committees throughout England and Wales for the important national work which they have done.

Although the Central Medical War Committee has thus finished its work in connexion with demobilisation, it will not be dissolved until the annual representative meeting in July next, and in the meantime will continue, through its General Purposes Subcommittee, to assist so far as it can those members of the profession who are still on service or recently discharged from it. Local Medical War Committees are therefore being advised not to dissolve, but to adjourn and hold themselves in readiness in case any business arises which may call for their consideration.

The Committee of Reference.

The Ministry of National Service having informed the Committee of Reference that it will discontinue to exercise its functions at the end of this month, the Committee will be unable to put forward, through the Ministry, the names of members of the staffs of the London Hospitals and Medical Schools for early demobilisation. The Committee have already applied for the release of all those whose names have been supplied to them, and will still endeavour by direct application to the Admiralty and War Office to facilitate the release of those who may yet be asked for by the hospitals and medical schools. Looking to the more general demobilisation determined upon by the Secretary of State for War, the duties of the Committee of Reference, except as a Tribunal of Appeal, may now be considered as completed. Nevertheless, the Committee will remain in existence for the present with a view to afford any assistance which may be necessary to H.M. Government, and for the consideration of other matters, incidental to the war, which may be referred to them.

URBAN VITAL STATISTICS.

(Week ended March 22nd, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had declined from 35·7 to 28·4 in the three preceding weeks, further fell to 20·9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 18·0, or 3·4 per 1000 below that recorded in the previous week; among the remaining towns the death-rates ranged from 9·8 in East Ham, 9·8 in Oxford, and 10·5 in Eastbourne, to 37·9 in Darlington, 39·2 in Bury, 40·2 in Stoke-on-Trent, 42·4 in Barnsley, and 49·0 in Middlesbrough. The principal epidemic diseases caused 208 deaths, which corresponded to an annual rate of 0·8 per 1000, and included 73 from measles, 46 from infantile diarrhoea, 38 from diphtheria, 29 from whooping-cough, 15 from scarlet fever, and 5 from enteric fever. Measles caused a death-rate of 1·7 in Sheffield, 8·1 in Rotherham, and 8·3 in Middlesbrough; and scarlet fever of 1·2 in Birkenhead. The deaths from influenza, which had been 3889, 3218, and 2320 in the three preceding weeks, further declined to 1361, and included 230 in London, 107 in Birmingham, 74 in Manchester, 69 in Liverpool, 45 in Leeds, 42 in Stoke-on-Trent, and 37 in Bristol. There were 5 cases of small-pox, 1010 of scarlet fever, and 1191 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5, 1020, and 1153 at the end of the previous week. The causes of 53 deaths in the 96 towns were uncertified, of which 14 were registered in Birmingham, 9 in Liverpool, 6 in Manchester, and 4 in London.

Irish Towns.—The 288 deaths in Dublin corresponded to an annual rate of 37·1, or 10·7 per 1000 below that recorded in the previous week, and included 77 from influenza, 6 from measles, 5 from infantile diarrhoea, and 1 from diphtheria. The 238 deaths in Belfast were equal to a rate of 30·9 per 1000, and included 2 from diphtheria and 1 each from whooping-cough and infantile diarrhoea.

LONDONDERRY INFIRMARY.—Mrs. A. G. G. McCay has contributed £1000 to endow a bed in the County and County Borough Infirmary, Londonderry, in memory of her husband, the late Dr. J. S. McCay, of Troy, Londonderry, formerly sub-sheriff of that city.

Correspondence.

"Audi alteram partem."

THE NURSING REGISTER.

To the Editor of THE LANCET.

SIR,—It is stated in the annotation under this heading in your issue for March 22nd that the Central Committee for State Registration will not consider the proposal that any scheme for State registration should include nurses who have special hospital training only. I desire to point out that the writer of the annotation has apparently overlooked Clause 11, (1) (h) of the Central Committee's Bill, which distinctly provides for what is known as "reciprocal training." Under this clause the training in a special hospital (e.g., a children's hospital) would be allowed, subject to certain conditions, to count as part of the general training required under the Act; the clause allows, in fact, just such a scheme as is outlined by your annotator himself towards the end of his note.

I am, Sir, yours faithfully,

E. W. GOODALL,

Hon. Medical Secretary, Central Committee for
the State Registration of Nurses.

Grove Military Hospital, S.W., March 22nd, 1919.

* * Colonel Goodall's explanation of the significance of the clause in the Central Committee's Bill is a welcome confirmation of our view that the aims of the two rival Parliamentary measures should readily be reconciled. We have been asked to publish a letter addressed to an enquirer by Sir Arthur Stanley, Chairman of the College of Nursing, Limited, in which he states the attitude which the College will take towards the Nurses' Registration Bill now before the House of Commons. Sir Arthur Stanley writes:—

The Council of the College of Nursing has had this matter under its consideration, and it has decided that as the Bill affirms the principle of State recognition of the nursing profession it should, so far, be supported. I am quite aware, and so are the members of the Council, that a few of the principal supporters of the Nurses' Registration Bill have constantly misrepresented the aims and objects of the College, and have insulted those who were in any way assisting it. We hold, however, that no personal feeling should be allowed to interfere with the attainment of State registration, which means so much for nurses, and you will be glad to know that its members are sufficiently broad-minded to disregard petty personalities and to work with a single mind for the good of the nursing profession. ED. L.

CULTIVATION OF A FILTER-PASSING ORGANISM IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—To avoid the possibility of misunderstanding, I desire to amplify a perhaps obscure paragraph in my obituary notice of the late Major H. G. Gibson, R.A.M.C., published in your issue of March 8th. Referring to the cultivation, by the Noguchi technique, of a minute filter-passing coccus, I stated that the independent findings of Majors Gibson and Bowman and Captain Connor had been confirmed by the work of Captain J. A. Wilson, R.A.M.C., a note on which was published by Sir John Rose Bradford, Captain E. F. Bashford, and Captain J. A. Wilson in THE LANCET and the *British Medical Journal* of Feb. 1st. This paragraph, though intended merely to show that similar findings, mutually confirmatory, had been arrived at independently by two groups of investigators, has been construed as an implication that priority was claimed by me for Majors Gibson and Bowman and Captain Connor. No such implication was intended. Though Captain Wilson's work was not considered by Sir John Rose Bradford to be sufficiently complete to justify publication until the latter part of January, 1919, this officer had been successful in making "Noguchi" cultures of what appears to have been the same organism some months before this was done by Gibson, Bowman, and Connor.

At the same time full credit for independent and original work must be given to the latter workers who were unaware that the "Noguchi" technique had already been employed in culture work in influenza. As the paragraph in question

has already given rise to misunderstanding, I hope that, in justice to Captain J. A. Wilson, this letter may be given early publicity.—I am, Sir, yours faithfully,

S. L. CUMMINS,
Colonel, A.M.S.; Adviser in Pathology.
B.E.F., France.

March 19th, 1919.

THE COPPER TREATMENT OF LUPUS.

To the Editor of THE LANCET.

SIR,—Mr. H. J. Gauvain and Dr. H. A. Ellis are to be congratulated upon the successful results they have obtained with brass paste in the treatment of cutaneous tuberculosis.¹ In my paper upon the subject, read before the Brighton meeting of the British Medical Association in 1913, I pointed out the hopefulness of the copper method in cases of lupus vulgaris.² I then employed copper-potassium tartrate, in the form of Fehling's solution, injecting hypodermically, directly into the lupoid tissue, from $\frac{1}{4}$ to 2 c.cm. of a 1 per cent. solution, or, as an alternative, copper chloride was used in the same strength. Some slight local reaction was observed, but three days later the lupoid nodules were seen to be paler and flatter, and ultimately to become necrotic. If the brass preparations will prove to be so completely selective in their action, without any destructive effect upon healthy tissue, a valuable remedy will indeed have been found. It will be interesting to observe the effect of these newer combinations of copper upon lupus of the mucous membranes.—I am, Sir, yours faithfully,

G. NORMAN MEACHEN, M.D., M.R.C.P.

Braintree, March 20th, 1919.

ABSENCE OF CANCER IN THE ARCTIC REGIONS.

To the Editor of THE LANCET.

SIR,—Mr. Vilhjalmur Stefansson has returned from his expedition to the Arctic and has written to me from Alaska to state that cancer does not exist among the Esquimos. He kindly undertook this investigation at my request when he left in 1914. Previous to this Sir W. MacGregor, Dr. W. T. Grenfell, Mr. Frank Bezley, and more recently Rear Admiral Peary, have all told me that they had never seen a case of cancer among the native tribes of the Far North; and it was their observations which prompted me to ask Mr. Stefansson on the eve of his departure in 1914 to make a special investigation. Mr. Stefansson also sends opinions to the same effect from Dr. Grafton Burke and the late Dr. George Howe, who worked for years on the Yukon River. It may be remembered that Panum half a century ago remarked that the disease was either extremely rare or did not exist in Iceland and South Greenland.

I think therefore we may safely assume that cancer does not exist in the Arctic. It is a point of great importance to cancer research, for it has been generally accepted that the disease is ubiquitous. This evidently is not the case, and the question now arises as to how far this new fact may alter our conceptions as to the causes of the disease. It seems to me that the absence of cancer in the Arctic can only have one of three explanations—racial, dietetic, or climatic. The Esquimos were originally Asiatics like all the Indians of the American Continents, and there is no reason to suppose any physical or physiological difference which will exempt them from cancer. Moreover, Panum's observations were on Europeans—Norwegians and Danes. Dietetically the Esquimos are enormous meat-eaters, but until 20 years ago did not have vegetables; otherwise their food does not differ from that of other natives, and Panum's observations again negative a dietetic explanation. The climatic explanation seems the best, for the climate of the Arctic differs from any other part of the inhabited globe; but it revives the parasitic theory. The cold is so intense that saprophytic organisms cannot exist. Nothing putrefies if left in the open. While contagious diseases (venereal; &c.) are common, diseases which are contracted from the general atmosphere, such as a "cold," are unknown. It would appear, therefore, that cancer may come into a similar category, and that part at least of the cause of it is due to an organism which invades the body from without, which is air-borne in part of its life-history, and which cannot exist in the Arctic climate.

¹ THE LANCET, March 15th, 1919.² Brit. Med. Jour., 1913, ii., 1005.

Although I have tried to correlate them, all the other theories as to the causation of cancer appear to me to fail in view of the new-proved fact that the disease does not exist in the Far North.

I have sent all the details to the *Journal of Cancer Research*, but think that those interested in the cancer problem in this country might also like to hear briefly of Mr. Stefansson's discovery.

I am, Sir, yours faithfully,
Clinical Laboratory, Ministry of National Service,
Conduit-street, W., March 18th, 1919.

MUSK IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—I think it would be well if you called attention to the value of musk as a heart stimulant in severe cases of influenza. My friend, Dr. Humphrey Davy, reminds me that it was used as such in typhus fever in Ireland with good effect in the second week of that disease. It certainly seemed to do good when I gave it in grain doses in the influenza epidemic of 1890. Several cases of double pneumonia in octogenarians so treated recovered. The only objection to its use is its high cost, which at that time was 1s. per grain. I am informed that it is now selling at 6d. per grain. It was well worth the expenditure, but friends of patients should be warned of the price in advance.

I am, Sir, yours faithfully,
ARTHUR RANSOME, M.D., F.R.C.P., F.R.S.
Bournemouth, March 23rd, 1919.

HÆMATEMESIS AFTER ABDOMINAL OPERATION.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Dec. 21st, 1918, there is an article by Dr. J. V. Arkle, of Kalgoorlie, on Hæmatemesis as a Complication of Appendicectomy. I have had two cases following hysterectomy similar to the cases he records, but unfortunately one of them died.

CASE 1.—I was consulted by a woman of 35 for pain in the back and some leucorrhœa. There was no history of menorrhagia, but she had two abortions previously, each of about three months' gestation. A diagnosis of uterine tumour was made, and an operation was suggested, which was agreed upon and soon after performed under spinal anaesthesia. The operation was uneventful, inasmuch as the uterus was free from any adhesions, though there were several small fibroids invading the whole of the uterus. A complete hysterectomy was performed, and for four days after the operations the patient was making an uninterrupted recovery when suddenly she started complaining of great thirst and looked pale and restless. After a few hours she vomited a large quantity of blood, and in spite of best precautions she continued vomiting blood and finally succumbed. A second exploration was not done as the hæmatemesis was distinctly the cause of the mischief.

CASE 2.—In October last a patient of about 42 was brought to me by a local medical practitioner with a distinct history of uterine tumour. A supravaginal hysterectomy was performed under spinal anaesthesia and, as in the previous case, the operation presented not many difficulties. About 40 hours after the operation I was suddenly asked by the night nurse to see the patient, as she had vomited a large quantity of very dark blood. A hypodermic injection of adrenalin was immediately given and continued with 20 minims of ext. ergot. liq. by the mouth for 24 hours. The vomiting of blood gradually diminished and the patient was discharged on the twenty-fourth day perfectly well.

It is suggested that these hæmorrhages occur as the result of interference with the omentum, but in neither of these cases was there the slightest cause to disturb the omentum to any great extent.—I am, Sir, yours faithfully,

F. R. PARAKH, M.D. Vict., M.R.C.S., &c.
The Parakh Hospital, Khetwadi, Bombay, Feb. 8th, 1919.

ARTIFICIAL CYANOSIS OF THE LIPS.

To the Editor of THE LANCET.

SIR,—The war has brought to light not a few instances of malingering, and it is important that all such cases, whether connected with the war or not, should be brought to the notice of the profession. Heart affections, especially in the absence of recognisable organic disease, are among those which easily lend themselves to this form of deception.

About ten years since a young woman came under my care as an out-patient at the National Hospital for Diseases

of the Heart for cardiac symptoms; she was also of neurotic temperament. Mitral regurgitation with a fairly compensated heart was found. After a few months she was admitted for hysterical paraplegia, which rapidly yielded to electric baths. Later on she was again admitted for heart failure with the usual complications. Recovery took place and attendance at the out-patient room was resumed. Several months elapsed when, on a dark winter's day, she appeared looking very ill and having intense cyanosis of the lips, and she was promptly admitted. In the course of a thorough examination the following morning it was noticed that although there were some general duskeness of the skin it did not correspond with the intense blueness of the lips. I placed a thermometer in the patient's mouth and on withdrawing it purposely rubbed the lips with my finger, which was found to be slightly coloured. I directed the nurse to watch her during the morning toilet, and she was seen to rub her lips with an aniline pencil. I subsequently discovered that the relations between the patient and her stepmother were greatly strained owing to the latter having persuaded the girl's father that there was nothing the matter with her.

I was led to my suspicion by a previous experience. A man called in an awful fright because, on wiping his mouth after having eaten a bath bun, he found the handkerchief deeply stained and, on looking at his face in the glass, saw that his mouth was also blue. Examination of the handkerchief revealed the presence of small pieces of grit which marked paper like an aniline pencil. The man noticed something hard when eating the bun and promptly spat the contents of his mouth in his handkerchief. How the piece of pencil found its way into the bun was never discovered, though I related the circumstance to the baker at whose shop the bun was purchased.—I am, Sir, yours faithfully,

Harley-street, March 20th, 1919. CHARLES W. CHAPMAN.

ARE RELAPSES OF BACILLARY DYSENTERY FREQUENT?

To the Editor of THE LANCET.

SIR,—It is stated that of some 1300 cases of dysentery sent back as cured to England since the war not a single one was found to show signs of bacillary dysentery, whilst some 12 per cent. were found with *Amœba histolytica*.

I write to ask whether it is the general experience of practitioners in England that cases of bacillary dysentery returned from abroad as cured do not relapse. The matter is of obvious importance, for one is called on to state whether a patient is liable to a relapse of the disease when he returns home.

I am, Sir, yours faithfully,
J. C. MCWALTER, M.D., LL.D., D.P.H.
Alexandria, Egypt, March 8th, 1919.

IMMUNITY IN "INFLUENZA."

To the Editor of THE LANCET.

SIR,—Among 269 cases of "influenza," mainly children, occurring in three schools in the summer, autumn, and winter waves of the disease there were two children with definite second attacks and six further alleged second attacks. Taking all six as genuine, the rate of second attack is (approximately) 3 per cent. If further investigations confirm these figures, it would appear that for practical purposes one attack of "influenza" confers immunity for some six months, at least among children.

I am, Sir, yours faithfully,
Colwall, Malvern, March 21st, 1919. MARY H. WILLIAMS.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.—At the annual meeting on March 25th of the National Hospital for the Paralyzed and Epileptic, Queen-square, W.C., when Sir Frederick Macmillan took the chair, it was reported that the expenditure of the hospital and its Finchley branch had increased from £19,108 in 1914 to £30,230 in 1918. Throughout the war 70 beds had been provided for soldiers suffering from nerve injuries and affections, and this work was being followed up by special provision, in three branch hospitals, for discharged men in connexion with the Ministry of Pensions. The hospital and its branches suffered acutely in the influenza epidemic, and the board room was utilised as a special isolation ward.

Obituary.

WILLIAM ALEXANDER, M.D. R.U.I., F.R.C.S. ENG.,
LECTURER ON CLINICAL SURGERY AT THE UNIVERSITY OF
LIVERPOOL.

Dr. W. Alexander, who died at Heswall, near Liverpool, on March 9th, was born at Antrim, and received his medical education at Queen's College, Belfast, where as a gold medallist and exhibitor he graduated at the Royal University of Ireland in 1870. He became a Fellow of the Royal College of Surgeons of England seven years later, and in 1881 wrote the Jacksonian prize essay on the Pathology and Surgical Treatment of Diseases of the Hip-joint, and in 1883 the Sir Astley Cooper prize essay at Guy's Hospital on the Pathology and Pathological Relation of Chronic Rheumatic Arthritis. He was lecturer on Clinical Surgery at the University of Liverpool, and honorary surgeon to the Royal Southern Hospital, Liverpool, for 22 years, which post he resigned in 1910. He was visiting surgeon to the Liverpool Workhouse Hospital from 1875 to 1910, ex-President of the British Gynaecological Society, Fellow of the Royal Society of Medicine, and a member of the Liverpool Medical Institution. He was a Lieutenant-Colonel in the Territorial Force and was on the staff of the 1st Western General Hospital. Dr. Alexander's name is associated with the treatment of epilepsy, on which subject he contributed a paper on the Surgical Treatment of Epilepsy, published in THE LANCET in 1878, and one on the Treatment of Epilepsy, which was published in *Brain* in 1882. He was medical officer to the Home for Epileptics at Maghull, which was founded for the cure of this disease.

Dr. Alexander was a very accomplished and capable man, who never filled in the public eye the place for which he was equipped.

ALEXANDER ROBERT COLDSTREAM, M.D. EDIN.,
F.R.C.S. EDIN.

Dr. Alexander Robert Coldstream, who died at his residence in Florence on Feb. 26th, was well known to many English and American visitors to the Tuscan capital. He was born in Edinburgh on August 4th, 1852, the son of a medical man, and was educated first at the Edinburgh Academy and later at the University, where he graduated M.B., C.M. in 1874. He held resident appointments at the Royal Infirmary and at Chalmers' Hospital, and for a time practised in Leith and Edinburgh. But having proceeded to the M.D. degree of his University in 1881, he went to Florence two years later, where he practised for more than 30 years and made a large number of permanent friends, while he enjoyed a big practice among sojourners, and wrote a popular monograph on "Florence as a Health Resort." On his retirement in 1914 he received from his many friends and patients a presentation which may be described as thoroughly well earned, but not unlike other testimonials. But in 1917 he was the recipient of a compliment of a unique character—an illuminated address for his "characteristic British action" in saving an Italian girl from drowning by plunging into deep water and holding her up until means of safety arrived. Dr. Coldstream was then 65 years of age.

During the war Dr. Coldstream devoted much of his time to works of philanthropy, one of his particular interests being the British Home for Italian Wounded, to which he acted as treasurer throughout the period of hostilities, contributing much to the success of this excellently organised Red Cross Hospital by his energy, tact, and complete knowledge of Italian affairs. He was also honorary acting secretary to the British Relief Fund for helping poor English men and women, and secretary to the Patriotic League of Britons over seas.

ROBERT SYDNEY MARSDEN, M.B., C.M. EDIN.,
D.Sc., F.R.S.E.

Dr. R. S. Marsden, who died on March 8th, at the age of 62 years, was educated at Edinburgh and on the continent, took the B.Sc. degree in 1877, the D.Sc. two years later, and qualified in 1885. For a time he practised at Malton, in Yorkshire, where he was afterwards medical officer of health, and in 1891 he was appointed medical officer of health for Birkenhead, which post he held for more than a quarter of a century. In 1892 he took the D.P.H. diploma of the Royal College of Surgeons of Edinburgh. In his

endeavour to promote the health and well-being of the town which he represented one of his early achievements was the substitution of the water-closet for the privy midden on about 4000 premises, mainly in the centre of the town. He was also instrumental in the establishment of the fever hospital and the introduction of refuse destructors, whilst the improvement of housing conditions and of school hygiene, the abolition of underground bakeries, and adequate meat inspection were other directions in which his activities were engaged. He carried out important work in maternity and child-welfare schemes, tuberculosis dispensaries, the treatment of cases of mental deficiency, and the campaign against venereal diseases.

Dr. Marsden, who was a Fellow of the Institute of Chemistry, was particularly interested in this science, and was a pioneer of the artificial production of diamonds, on which subject he wrote a treatise in 1881 entitled, "Artificial Preparation of the Diamond." For some time he was lecturer on chemistry at the University of Bristol, and carried on research work in chemistry and physics. He was a Fellow of the Royal Society of Edinburgh, of which he was a past President, and had contributed papers on chemistry, physics, public health, and sanitary science. Literature and art also interested him, and in spite of his many scientific activities he found time to speak at, and to take part in, the debates at the Birkenhead Literary and Scientific Society; he was also a member of the Birkenhead Art Club. Since 1898 he had been instructor and lecturer on Meat Diseases to the officers of the Royal Army Service Corps.

The War and After.

THE CASUALTY LIST.

THE names of the following medical officers appear among the casualties announced since our last issue:—

Died.

Capt. J. W. Bingham, R.A.M.C., qualified at Edinburgh in 1907, and afterwards practised at Blyth, Northumberland. He joined up in the early part of 1915.
Major H. H. Griffith, Australian A.M.C., died at the 3rd (London) General Hospital of pneumonia following influenza.

OBITUARY OF THE WAR.

ROLAND AUGUSTUS HOBBS, M.R.C.S. ENG.,
TEMPORARY SURGEON-LIEUTENANT, ROYAL NAVY.

Surgeon-Lieutenant R. A. Hobbs, who died of pneumonia on Feb. 13th at the Royal Naval Hospital, Haslar, aged 33 years, was second son of Mr. F. A. Hobbs, of High Wycombe, Bucks. Educated at the Portsmouth Grammar School and at St. Mary's Hospital, he took the Conjoint Diploma in 1908. He was house surgeon and anaesthetist to the Royal Surrey County Hospital, Guildford in 1911, and in the same year his paper on "Tetanus Treated by Chlorotone—Recovery" was published in the *British Medical Journal*. He went into practice at High Wycombe, Bucks, where he was honorary medical officer to the High Wycombe and Earl of Beaconsfield Memorial Cottage Hospital. He joined the Navy as a temporary surgeon on August 4th,



1914. After serving in the North Sea and in the West Indies he was appointed senior medical officer to the Royal Naval Hospital, Hull. His last appointment was to H.M.A.S. Melbourne.

Surgeon-Lieutenant Hobbs married, in 1917, Marjorie, elder daughter of the late Mr. Justice Cargill, of Kingston, Jamaica, and leaves a widow and one daughter.

CHARLES MACKIE BEGG, C.B., C.M.G., M.D.,
F.R.C.P. & S. EDIN.,

COLONEL, NEW ZEALAND EXPEDITIONARY FORCE.

Colonel C. M. Begg, who died suddenly from pneumonia following influenza at the age of 39 years, was born at Dunedin, New Zealand, and was fourth son of the late Alexander Campbell Begg. Educated at Edinburgh University, where he had a distinguished career as a student, he took the M.B., Ch.B. degree in 1903, afterwards gaining the M.D. and F.R.C.S., and about 12 months ago the F.R.C.P. He served as medical officer on the Transport *Aurora* during the Somaliland campaign in 1903, and on his return to New Zealand built a large and lucrative practice in Wellington, taking at the same time a great interest in the Territorial Service. On the outbreak of war he volunteered for overseas service, and left New Zealand with the main body N.Z.E.F. as Lieutenant-Colonel in charge of the ambulance. He was present at the fighting on the Canal in 1915, and then proceeded to Gallipoli with the New Zealanders and Australians, landing on the Peninsula on the memorable April 25th, 1915. On June 27th he was slightly wounded in the knee by a shell. He returned to duty after a few days' absence, and later on developed dysentery and was invalided after the heavy fighting in August. He was sent back in November and became temporary Colonel and Assistant Director of Medical Services to the New Zealand and Australian Division, and remained on Gallipoli till the evacuation. Returning to Egypt, he was promoted to the rank of Colonel, and was appointed Assistant Director of Medical Services to the New Zealand Division. For his services on Gallipoli he was mentioned in despatches and awarded the C.M.G. After further service in Egypt he landed in France with the New Zealanders and saw fighting around Armentières and the Somme in 1916. On Oct. 20th, 1916, he became Deputy Director of Medical Services to the Second Anzac Corps. With this corps, which became later the 22nd Corps, he saw fighting around Ypres, Messines, La Bassée, Ville, and later on, in the great German offensive, he worked in conjunction with the French Army attacking west of Rheims. For his services in France he was twice mentioned in despatches and awarded the C.B. He was also mentioned in the French *Ordre de Jour* and awarded the *Croix de Guerre*. In November, 1918, he became Director of Medical Services of the New Zealand Expeditionary Force, which post he held at the time of his death. Even in the darkest days of the war his cheerful optimism was a constant inspiration to all the officers and men who worked with him. A man of conspicuous ability and judgment, an excellent organiser and administrator, his death will be a serious loss to the medical services of New Zealand.

In 1909 he married Miss Treadwell, of Lower Hutt, New Zealand. He leaves a widow and two sons.

THE HONOURS LIST.

The following awards to medical officers (all members of the R.A.M.C. except where otherwise stated), in recognition of their gallantry and devotion to duty in the field, are announced. The acts of gallantry for which the decorations have been awarded will be given later:—

Bar to Distinguished Service Order.

Maj. O. A. Elliott, D.S.O., Can. A.M.C.; Capt. (acting Lt.-Col.) W. R. Gardner, D.S.O.; Lt.-Col. D. P. Kappeler, D.S.O., Can. A.M.C.; Lt.-Col. T. McC. Leask, D.S.O., Can. A.M.C.

Distinguished Service Order.

Capt. (acting Lt.-Col.) W. W. Boyce; Maj. R. F. Craig, Austr. A.M.C.; Capt. (acting Lt.-Col.) W. H. L. McCarthy, M.C.; Temp. Capt. C. R. Young, M.C.



Second Bar to Military Cross.

Temp. Capt. (acting Maj.) G. Rankine, M.C.

First Bar to Military Cross.

Capt. J. E. Barry, M.C., Can. A.M.C.; Temp. Capt. M. C. Burke, M.C.; Temp. Capt. G. M. Cameron, M.C.; Capt. F. T. Campbell, Can. A.M.C.; Capt. H. C. Davis, Can. A.M.C.; Lt. (temp. Capt.) W. H. Ferguson, M.C.; Lt. (acting Maj.) J. La F. Lauder, D.S.O.; Capt. (acting Maj.) H. B. Low, M.C.; Capt. H. C. Moses, Can. A.M.C.; Temp. Capt. J. C. Ogilvie, M.C.; Temp. Capt. J. Rodger, M.C.; Capt. (acting Maj.) J. B. Scott, M.C.; Temp. Capt. D. C. Suttle, M.C.; Temp. Capt. G. D. Watkins, D.S.O., M.C.; Temp. Capt. W. B. Wilson, M.C.

The Military Cross.

Capt. L. T. Allsop, Aust. A.M.C.; Capt. J. R. Anderson, Aust. A.M.C.; Capt. (acting Maj.) H. M. Barrett, Can. A.M.C.; Temp. Capt. H. J. B. Basted, Temp. Capt. G. A. Beyers, S. Afr. M.C.; Temp. Capt. G. S. Brown; Temp. Capt. (acting Maj.) S. B. B. Campbell; Capt. J. S. Clarke; Temp. Capt. G. O. Connell; Capt. L. D. Densmore, Can. A.M.C.; Temp. Capt. C. L. Dold; Temp. Capt. (acting Maj.) J. A. Doull; Temp. Capt. (acting Maj.) S. Fenwick; Temp. Capt. Can. A.M.C.; Capt. (acting Maj.) W. D. Frew; Temp. Capt. C. M. Ganapathy, I.M.S.; Temp. Capt. G. A. C. Gordon; Temp. Capt. E. H. H. Granger; Temp. Capt. Z. A. Green; Temp. Capt. A. P. Hart; Temp. Lt. W. Hickey; Temp. Capt. St. G. M. L. Homan; Temp. Capt. G. Jackson; Capt. F. McN. Johnson, Can. A.M.C.; Capt. A. P. Lawrence, Austr. A.M.C.; Temp. Capt. H. R. Lawrence, S. Afr. M.C.; Capt. G. W. Longhead, Can. A.M.C.; Temp. Capt. M. Manson; Temp. Capt. R. C. McMillan; Capt. A. Y. McNair, Can. A.M.C.; Lt. W. G. F. Owen-Morris; Capt. (acting Maj.) H. P. Rudolph; Temp. Capt. (acting Maj.) R. B. Rutherford; Lt. S. L. Bhatia, I.M.S.; Lt. (temp. Capt. and acting Maj.) G. E. Spicer; Temp. Capt. F. R. Scurridge; Temp. Capt. (acting Maj.) C. Sullivan; Temp. Capt. E. C. Tamplin; Capt. J. Thompson; Temp. Capt. W. Tudhope; Temp. Capt. (acting Maj.) A. W. Uloth; Temp. Capt. R. W. L. Wallace; Capt. R. E. A. Weston, Can. A.M.C.; Capt. (acting Maj.) M. White; Capt. H. P. Whitworth.

The following awards to and promotions of medical officers are also announced:—

C.B.E.—Lt.-Col. (temp. Col.) A. B. Soltan, C.M.G., O.B.E. (substituted for the notice which appeared in THE LANCET of Jan. 11th, 1919, p. 85).

To be *Brevet-Major*.—Capt. R. D. F. MacGregor, M.C., I.M.S.; Capt. J. Scott, D.S.O., I.M.S.; Capt. C. W. Wigram, R.A.M.C.

Distinguished Service Cross.—Surg.-Sub.-Lt. A. A. Osman, R.N.V.R.

MENTIONED IN DESPATCHES.

The names of the following medical officers of the R.A.M.C. (except where otherwise stated) have been brought to notice for valuable services rendered on hospital ships during the war:—

Temp. Maj. W. G. K. Barnes; Maj. A. Bird; Temp. Maj. J. A. Devine, D.S.O.; Lt.-Col. I. B. Emerson; Capt. (acting Maj.) H. F. Everett; Lt.-Col. (temp. Col.) R. S. H. Fahr, C.M.G., D.S.O.; Lt.-Col. P. B. Haig, C.B., I.M.S.; Temp. Capt. D. J. Jones; Temp. Maj. T. M. Kendall; Lt.-Col. C. W. S. Magrath; Lt.-Col. C. Milne, I.M.S.; Temp. Capt. H. T. L. Roberts; Temp. Capt. W. V. Robinson; Lt.-Col. E. W. Sibery; Temp. Capt. A. G. Southcombe; Temp. Capt. W. H. Stott; Maj. F. C. Whitmore; Temp. Maj. R. Wilson; Temp. Maj. S. W. Woollett.

And the following for valuable services rendered on the occasion of the sinking or damage by enemy action of hospital ships, transports, and store ships:—

Temp. Capt. (acting Lt.-Col.) G. W. Milne; Temp. Capt. W. G. Silvester; and Temp. Capt. T. D. Webster.

The name of Surg.-Lieut.-Comdr. G. D. Walsh, R.N., has been mentioned in despatches, and the names of Temp. Capt. W. N. Montgomery, R.A.M.C., and of Dr. J. E. Creswell have been brought to notice for valuable services rendered in connexion with military operations.

FOREIGN DECORATIONS.

French.

Légion d'Honneur: Croix de Chevalier.—Lt.-Col. (temp. Col.) H. Collinson, C.M.G., D.S.O., R.A.M.C. (T.F.); Maj. (temp. Lt.-Col.) D. Rorie, D.S.O., R.A.M.C. (T.F.); Capt. (acting Maj.) J. M. Smith, M.C., R.A.M.C. (T.F.).

Croix de Guerre.—Col. A. E. Snell, C.M.G., D.S.O., Can. A.M.C.

Italian.

Order of the Crown of Italy.—Officer: Lt.-Col. R. W. Knox, D.S.O., I.M.S.; Lt.-Col. J. Kyffin, R.A.M.C. (T.F.).
Croce di Guerra.—Temp. Capt. T. W. Mason, R.A.M.C. (T.F.).

Rumanian.

Order of the Star of Roumania.—Commander: Surg.-Vice-Adml. Sir W. H. Norman, K.C.B.

Order of the Crown of Roumania.—Officer: Surg.-Lieut.-Comdr. G. B. Scott, D.S.O., R.N. Chevalier: Surg.-Lieut. W. L. Clegg, D.S.O., R.N.

Belgian.

Order of the Crown of Belgium.—Commander: Surg.-Vice-Adml. Sir W. H. Norman, K.C.B.; Surg.-Gen. J. J. Dennis, C.B., R.N. Officer: Surg.-Comdr. J. O'Hea, R.N.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

The following additional casualty among the sons of medical men is reported:—

Lieut. M. Hayes, Cheshire Regiment, died at Horsham, of malaria and pneumonia, youngest son of the late Surg.-Major W. H. Hayes, I.M.S., of Farnham, Surrey.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Ministry of Health Bill.

THE Standing Committee of the House of Commons further considered the Ministry of Health Bill on Thursday, March 20th, Sir ARCHIBALD WILLIAMSON in the chair.

The Committee resumed the discussion of the subsection to Clause 3, which provides for the transfer by Order in Council from the Minister of Health to other Government departments of such powers and duties relating to the relief of the poor as appear to His Majesty to be more conveniently exercisable by such other departments. The excision of the subsection was moved at Tuesday's sitting by Captain BARNETT.

After some discussion Dr. ADDISON agreed that before the report stage he would confer with those who had acted with him in framing the clause, and on this understanding the amendment was withdrawn.

On the question that Clause 3 as amended stand part of the Bill objection was taken to procedure by Orders in Council as placing an autocratic power in the hands of Ministers.

Dr. ADDISON admitted that Orders in Council were a little unpopular nowadays, no doubt owing to the operation of the Defence of the Realm Act. They must adopt some method for carrying into effect the provisions of the Bill, and he thought the most business-like method had been adopted.

Sir RYLAND ADKINS thought they ought jealously to maintain the use of Orders in Council for purely administrative work. He thought Parliament ought to have a voice in saying to which Minister powers of importance should be transferred by Order in Council, and that an Order in Council should be laid in draft before each House and not be submitted to His Majesty until a resolution of each House had been passed approving or modifying it.

Dr. ADDISON said he thought this suggestion a useful one, and it might be considered when Clause 8 was reached which relates to Orders in Council.

Clause 3 as amended was then added to the Bill.

Consultative Councils.

On Clause 4, the first section of which deals with the establishment of consultative councils,

Sir W. WATSON CHEYNE moved that for the words "it shall be lawful for His Majesty by Order in Council to establish consultative councils" there should be substituted "it shall be the duty of the Minister to set up advisory councils." There were two things which were of the greatest importance for the success of the Ministry. The first was the question of the research department because that was the eyes of the Ministry, and without that it would not do what it ought to do. The second was to obtain the agreement of everyone who was involved in the work of the Ministry, and perhaps the most important body of men were the medical profession. The question of the Ministry of Health had been before the medical profession for a long time. It had been discussed all over the country in various societies and under various conditions, and for once in a way the medical profession seemed to be pretty well agreed. They were all in favour of the Ministry of Health and the point that had concerned them was how to get it on the proper lines from the medical point of view, and they had all centred themselves on this question of consultative councils, so that anything which would make them suspicious that these councils might be delayed for some time would go very much to undermine the confidence of the medical profession in this project. What they feared was that as this was left more or less a permissive question in the Bill a future Minister might not take the same view as Dr. ADDISON in regard to these councils. His suspicions were still added to by the power given in Clause 8 to revoke or vary any Order in Council by a subsequent Order. As things stood he did not feel that they could place absolute reliance on the consultative councils as a permanent part of the Ministry, and as forming a safeguard for the medical profession and the carrying out of the medical requirements in accordance with the wishes of those in the profession. That was an extremely important point, because the medical profession were the people who had to carry out the Ministry of Health, and the Ministry must have their complete confidence. That could only be obtained by making these consultative councils integral parts of the Bill which could not be altered by any Minister.

"Advisory" or "Consultative."

Sir P. MAGNUS heartily supported the amendment. Dr. ADDISON knew very much better than he did how unanimous the medical profession were with regard to the importance of establishing a council which would advise the Ministry

on all health matters. The clause as now worded would not satisfy the bulk of the medical profession. He spoke on behalf of some hundreds of the medical profession, including even Dr. ADDISON himself. Some 1500 or 2000 medical men were members of the constituency which he had the honour to represent, and he had received from them repeated statements as to the importance of including in this Bill the establishment of a council to advise the Ministry, which council should be a necessary and essential part of the Bill. Unless the Ministry were well advised by members of the medical profession the whole of their work might not be so satisfactory as it otherwise would be. He urged that the councils should be advisory and not consultative. "Advise" was a stronger term than "consult."

Dr. ADDISON: Do you suggest that the Minister should be compelled to accept their advice?

Sir P. MAGNUS said that was not absolutely necessary. The word "advise" implied that they had power to give the Ministry information which they might not otherwise possess, while the word "consult" meant that they might merely refer to them. The medical profession attached very great importance to the word "advisory" instead of "consultative." The medical profession desired that their advice be taken and that they should have direct access to the Minister in giving their advice, and, if necessary, access to Parliament in order to enforce the advice that was given. He attached very great value to the advice given by experts in a matter of this kind, and he hoped that any advice given by these experts to the Minister would be carefully considered and not be, in their own words, "pigeon-holed" on the understanding that it would be considered some time or other.

Sir A. WARREN, speaking as a layman who had had some experience on the advisory committee set up under the National Insurance Act, said that if the Advisory Committee under this Act was not to be of more importance than that under the Insurance Act, it was not going to be of much importance. This was a very vital part of the Bill, and he asked that in setting up either a consultative or advisory committee due regard should be had to representation. While they would not presume to trench upon the ground rightly occupied by the medical profession, he urged that in other matters that would have to be considered there should be most careful consideration given to representation according to the interests that would be involved.

Criticism of the Amendment.

Major ASTOR said there were three ways in which these bodies could be set up. There was the way proposed in the Bill now drafted. If it was to be done by His Majesty this was the correct way in which it should be set out in the Bill. The amendment proposed, if inserted, would not have the safeguard which he understood the honourable Member desired—namely, an opportunity of being consulted as a Member of Parliament as to the way in which the Ministry should consult these bodies. It was to ensure that safeguard that the Government had adopted the method proposed in the Bill. If the amendment were carried it would defeat the object which the mover and all of them had in mind—namely, that they should all work together as far as possible. The third alternative would be to specify in the Bill the exact nature of these councils and where they should be set up and the number of times they should meet in the year. The Minister in charge of the Bill was of the opinion that the consultative councils should be an integral part of the Ministry and should be able to assist them. It was quite possible that when they first set out they might find that they had not been able to set them up in the final shape or form. They wanted to get the value of the experience as they went on, and it might be necessary to alter certain matters, say, in regard to procedure. If they were to try to define exactly how often the councils were to meet, and so on down to the last detail, it would not be possible to get the advantage of their experience. The amendment would mean that they would have to come to Parliament and ask for a Bill if they wanted to alter anything in connexion with these councils, and this would mean delay. He did not think that the word "advisory" had behind it as much as had been suggested. He understood that the two words had been discussed while the Bill was being drafted, and that the word "consultative" was accepted in preference to the word "advisory."

Sir R. ADKINS: Does the Minister recognise any difference between them?

Dr. ADDISON: No.

Sir P. MAGNUS said he had reason to believe that the medical profession recognised a distinction.

Dr. ADDISON said he had consulted the most representative body that the medical profession ever got together, and they deliberately advised him that they wanted the word "consultative."

Major FARQUHARSON said that he wanted to say, on behalf of the medical profession, there was no desire whatever, either in the name of the council to be set up, or in the

action of the council, to in any way attempt to invade ministerial authority or responsibility. There was not the slightest intention on the part of the medical profession to place any degree of compulsion on the Minister to accept the advice of the council. He did not think that if the amendment were adopted and the word "advisory" substituted it would be acceptable to the profession. He thought that they were quite satisfied that the procedure should be by Order in Council.

Sir C. WARNER and Major LANE-FOX appealed to the Minister in charge of the Bill to give the Committee an explanation as to what these councils were to be like.

The Councils Described.

Dr. ADDISON said he thought that if the procedure was by Order in Council they must have faith that the Minister would feel it his duty to carry out the intentions of Parliament. He certainly would, and he was sure he would be promptly called over the coals if he did not. As to the councils themselves, he thought they ought to be as small as possible. He was a thorough believer in these bodies. He believed that many departments had suffered in the past because there had been no machinery in existence whereby they could have readily available expert counsel and advice in the stages when they were producing something and gradually getting it together, and before they became committed to a form of operations which they might subsequently desire to change. They suggested that the number of members of the council should not exceed 20. Their general conception was that there would probably be at least four bodies. He did not say that they would be distinct separate bodies, but there would certainly be one connected with the main problems of Local Government, and clearly one relating to insurance questions and the big financial questions connected therewith. And he thought whatever might be its form it was necessary to have one representing the general public composed of people of good sense and experience. It was clear that in framing their future health schemes they would have to consult freely with representatives of the great local authorities, with medical men, and with those who were experienced in insurance questions. He thought it desirable that this form of organisation should be brought into the body of the Ministry as part of its being, so that the Minister would have gradually available a body of experienced advisers who were accustomed to see things from the administrative point of view, the point of view of the Minister, and so forth.

(On the Committee resuming at 4 P.M.,)

Sir P. MAGNUS said he wished to make it perfectly clear that his remarks at the morning sitting referred only to the medical consultative council. He had not been aware till that morning that there was to be more than one consultative council.

Responding to further appeals for information from members of the Committee,

Dr. ADDISON stated that the committees would not be salaried, but paid the usual travelling and out-of-pocket expenses which the Government allowed to all committees, and he thought it should include payment for loss of remunerative time. Whatever might be the recommendations of these committees—and they would differ sometimes—the Minister could never be bound by whatever they voted; he eventually must accept responsibility for following their advice or rejecting it, or getting it qualified, as the case might be. He was proposing that they should have a Welsh Advisory Committee, but they did not propose that they should be formed up and down the country. It would never do to set up these committees on the basis of the representation of any interests, and he would set his face like flint against any suggestion of that kind. Nor did he think they should be constituted on the basis of the representation of districts.

After further discussion,

Sir WATSON CHEYNE said his object had been attained entirely. He therefore withdrew his amendment.

The amendment was withdrawn.

On the motion of Dr. ADDISON, an amendment was agreed to to insert the words "England and Wales," in the clause, enabling the Minister to set up councils in both countries.

Proposed Women's General Consultative Council.

Lieutenant-Colonel Sir S. HOARE proposed the insertion of the words, "One such council, to be called the Women's General Consultative Council, shall consist entirely of women." That afternoon he had received, as other Members had received, a communication from an organisation that represented 500,000 women, presided over by Lady RHONDDA, in favour of his proposal. They were also anxious that women should have the fullest and freest opportunity of expressing their views on the Bill.

Sir KINGSLEY WOOD assured the Committee that there would be adequate and due representation of women on the council. On the general administrative council there would also be ample opportunity of giving women adequate representation.

Dr. ADDISON said that there must be certain committees which would be composed for certain purposes solely of women, whether the amendment was put in the Bill or not. It was also clear that in respect of general purposes some of the councils would have to consist mostly of women; but all the same he should be disappointed if the Committee passed the amendment. It was not desirable to tie the hands of the Minister.

On a division the amendment was negatived by 22 votes to 14.

Consideration of Clause 4 Resumed.

(On Tuesday, March 25th, the consideration of Clause 4 was resumed.)

Mr. GODFREY LOCKER-LAMPSON moved an amendment providing that the reports of a consultative council should be published within two months of presentation to the Ministry unless it made a recommendation to the contrary.

Major ASTOR said if the amendment were carried the tendency would be for the Minister to hold back certain points possibly of a confidential nature in consulting these councils, or he might even be discouraged from consulting them at all.

The amendment was withdrawn.

Major BARNES moved to add a new section as follows:—

"No such council shall be established or sit in any area administered by a county or county borough council without the consent of the county or county borough council of that area; and where such consent is given every such council shall consist only of persons elected by the county or county borough council, as the case may be."

Dr. ADDISON said that the Local Government Board were continually consulting with the great local authorities, and the last thing he desired to do was to bring himself and the Ministry needlessly into conflict with those authorities.

The amendment was withdrawn, and Clause 4 was then agreed to.

Provisions as Regards Wales.

On Clause 5, which deals with provisions as regards Wales,

Dr. ADDISON moved an amendment giving the Minister power, subject to the provisions of the Act, to appoint such officers as he might think fit to constitute a Board of Health in Wales, through whom he might exercise and perform in Wales his powers and duties; the Board and any officer who was a member thereof should act under his directions and comply with the instructions of the Minister. He said if there was to be any step taken in the direction of devolution for the separate parts of the United Kingdom it must be done by specific legislation and not through the provisions of this Bill, but he wanted the Committee to understand that these words were necessary in the Bill under our present form of Government, inasmuch as the Minister of Health would be responsible for the administration of health affairs in Wales as well as in England. The experience of the past few years had shown that there were local and national considerations which required special machinery to deal with them adequately. In the gigantic task they had got before them they must look to some form of decentralisation. As the Bill was originally drawn the machinery, so far as Wales was concerned, was limited to purposes relating to the National Health Insurance. But they were already starting separate administrative machinery for Wales in connexion with housing. Therefore, he asked the Committee to agree to this amendment.

The amendment was agreed to, and Clause 5 was then passed.

Staff and Remuneration.

On Clause 6, which deals with staff and remuneration,

Mr. GEORGE THORNE moved an amendment providing that "no discrimination should be made for reasons of sex between men and women."

Major ASTOR said that in the opinion of the Government this amendment was unnecessary, but if the Committee felt that it should be adopted they would not oppose it.

Dr. ADDISON said that in setting up a women's branch of the medical department at the Local Government Board he had actually discriminated in favour of a woman in the appointment of Dr. Janet Campbell.

Dr. MURRAY said that in view of the new conditions of our political life this might operate as a protection for men. On a division the amendment was agreed to by 26 votes to 22.

Major ASTOR moved an amendment to provide that members of subcommittees of the general councils under the Act should have equality of treatment as regards payment of expenses and so on with the members of the main councils.

The amendment was agreed to.

Mr. LOCKER-LAMPSON moved an amendment to the effect that no money should be paid to members of consultative councils other than in respect of travelling and out-of-pocket expenses and reasonable compensation for loss of remunerative time. He said he was entirely against the payment of the members of these councils, but at the same time he did not want to rule out travelling expenses and out-of-pocket expenses.

Major ASTOR said that if the honourable Member would withdraw his amendment he would be prepared to move one as follows: "That no payment shall be made to members of consultative councils and committees other than the repayment of travelling expenses and the payment of subsistence allowances and compensation for loss of remunerative time." This would bring the procedure in this matter in line with what was already done under the Insurance Act. It would not necessarily mean that all members of these councils would be paid for loss of remunerative time.

Sir WILLIAM WHITLA suggested that there should be a scale such as that adopted for medical men attending assize courts, &c., of so much per day, or in other words, a system of taxed costs.

Major J. W. HILLS said he did not think there would be any difficulty about the medical men in this matter, but there must be some provision of the kind for persons who could not afford to give their time for nothing.

Mr. LOCKER-LAMPSON withdrew his amendment and Major ASTOR's amendment was agreed to.

Clause 6 as amended was then agreed to.

Clause 7 was agreed to, with an amendment providing if necessary for two secretaries as Members of the House of Commons.

Orders in Council: Insurance Acts: Other Amendments.

On Clause 8, which deals with provisions as to Orders in Council, an amendment was accepted and agreed to requiring the specific assent of both Houses of Parliament to Orders in Council transferring certain departmental powers and duties to and from the Ministry.

Clause 8 was agreed to.

Clause 9, which applies the Bill to Scotland, was deleted from the measure in view of the Government's intention to introduce a separate Bill for Scotland.

On Clause 10, which deals with consequential modifications of the Insurance Acts,

Dr. ADDISON gave an assurance that the deputy of the Health Minister in Scotland would be the chairman of the Scottish Insurance Commissioners. He gave the same assurance in regard to Ireland.

Clause 10 was agreed to.

On Clause 11, which deals with the commencement of the Act,

Dr. ADDISON accepted an amendment providing that the latest day for the transfer of powers to the Minister as set out in Subsection 1 of Clause 3 should not be later than one year after the passing of the Act.

The amendment was agreed to.

On the motion of Dr. ADDISON an amendment was agreed to providing that for the purposes of the Act Monmouthshire should be deemed to be part of Wales.

An amendment was proposed by Major ASTOR deleting the words "the Scottish Insurance Commissioners" from Section 3 of Clause 11.

The amendment was agreed to.

Clause 11 was agreed to.

The Attorney-General for Ireland (Mr. A. W. SAMUELS) moved to apply the Bill to Ireland in a clause to be inserted after Clause 10. The discussion was proceeding when the Committee adjourned until Thursday, March 27th.

HOUSE OF COMMONS.

THURSDAY, MARCH 20TH.

Port Hospital Accommodation.

Mr. LESLIE SCOTT asked the President of the Local Government Board whether he was aware that the Army Medical Council had, in conjunction with the Local Government Board, expressed the view that the port sanitary authorities at Liverpool should provide hospital accommodation for influenza cases; and whether he was aware that a grave recurrence of the influenza epidemic there was attributed by the local medical officer of health to re-importations of the disease by patients for whom hospital accommodation could be found only after delay and with difficulty.—Major ASTOR (Parliamentary Secretary to the Local Government Board) replied: The Local Government Board asked the Liverpool Port Sanitary Authority and other port sanitary authorities in October last to do everything possible to provide hospital accommodation for cases of influenza and other infectious illnesses requiring isolation amongst the crews of transports and other vessels arriving at the port, and the naval and military authorities promised their assistance. My right honourable friend has no information as to the statement in the last part of the question, but he has communicated with the port sanitary authority with regard to it.

Mr. LESLIE SCOTT asked the President of the Local Government Board (1) whether he was aware that repeated appeals to the War Office by the Port Sanitary Authority to release the largest Liverpool fever hospital, the only place in which suitable accommodation for influenza patients during an

epidemic could be provided, from the present military occupation had been without result, in spite of the fact that ward pavilions in that hospital were being used for storage, for clerical staff, and in other inappropriate ways; (2) whether he was aware that the acceptance by the War Office of the offer of the American Red Cross Hospital at Mossley Hill, which was no longer required for its purposes, would meet all local military needs and permit the release from military occupation of the fever hospital, for which the need in the city and port of Liverpool was at present exceptionally great.—Major ASTOR replied: My right honourable friend is aware of the requests of the Port Sanitary and Hospitals Committee of the Liverpool Town Council to the War Office that the Fazakerley Fever Hospital, which has been in military occupation since the beginning of the war, might be at once released, and the Local Government Board have already supported this request and have suggested to the War Office that they should at once consider whether the American Red Cross Hospital at Mossley Hill might not serve the purposes of the military authorities.

Mr. LESLIE SCOTT asked the President of the Local Government Board if he could state what practical assistance he could offer to the port sanitary authorities of the country towards providing hospital accommodation for influenza cases, as urged by the Army Medical Council and the Local Government Board; and whether he would use every effort to assist them in making such provision.—Major ASTOR replied: A conference has been arranged with representatives of the port sanitary authorities, at which this question, amongst others will be discussed.

MONDAY, MARCH 24TH.

Venerereal Diseases.

Major COURTHOPE asked the President of the Local Government Board whether he had statutory powers to schedule venerereal disease as notifiable disease; and whether in view of its prevalence he would immediately exercise this power?—Major ASTOR (Parliamentary Secretary to the Local Government Board) replied: The Local Government Board are empowered by the Public Health Acts to make regulations with a view to the provision of facilities for the treatment of persons affected with any epidemic or infectious disease, and for preventing the spread of such diseases. Regulations have already been made for the provision of treatment for persons suffering from venerereal diseases, and as at present advised my right honourable friend is not prepared to propose regulations providing for the compulsory notification of such persons.

Major COURTHOPE asked the Secretary for War whether he was aware that on the 4th inst. the registrar of Cherry-hinton Military Hospital reported to the local medical officer of health that on the previous day a soldier had been discharged from hospital at his own request suffering from venerereal disease and in an infectious condition; whether under the existing regulations the officers in charge of military hospitals were unable to retain a venerereal patient who was due for demobilisation, in order to complete the treatment of the disease; and whether in the interest of the public health he would prohibit the release of men suffering from venerereal disease in an infective condition?—Mr. CHURCHILL replied: Inquiry is being made, and I will communicate with my honourable and gallant friend as soon as I am in a position to do so.

Medical Treatment of Children (Ireland) Bill.

Mr. A. W. SAMUELS (the Attorney-General for Ireland) moved the second reading of the Public Health (Medical Treatment of Children—Ireland) Bill. He said the measure extended to Ireland the benefits of medical treatment already enjoyed by children in English elementary schools and enabled local authorities to have medical inspection of children in elementary schools in Ireland. He understood that the Bill was not opposed in Ireland and, in fact, was largely welcomed. The councils of the county and county boroughs were to be the local authorities for carrying out the purposes of the Act, and it would apply to elementary schools, either National Schools or those recognised by the Local Government Board, as providing efficient elementary education. The Treasury would provide an amount not exceeding one-half the expenses as might be incurred by the local authority in setting this medical relief in operation and carrying it into effect. It was hoped that it would be largely availed of in the country.

Lieutenant-Colonel W. GUINNESS asked why the Bill was drafted in a weaker form than the English Bill. It was imposed as a duty on the local education authority in England to provide medical inspection. In Ireland public opinion was much more backward than in England, and it was undesirable that this question should be left optional in Ireland.

Mr. M'GUFFIN expressed objection to the Bill, as it was permissive. Unless the Government took the Bill in hand seriously there was little hope that any good would attend the legislation they had in view.

Captain CRAIG said he should support the Bill, and so would all his friends sitting round him, but he regretted that the Government had not made the Bill mandatory from the very beginning and not only mandatory in the sense that the local bodies must carry out the provisions of the Bill. He hoped that much more drastic powers would be put in their hands. In the matter of health such measures as were necessary to cure a child of tuberculosis should be carried out by the local authority. In the same way throughout the whole range of children's ailments it was no use to give power of medical examination without giving the power to treat and if possible to make those children physically better members of the community. He maintained, for instance, that a parent having neglected his duty to his child's health, the local authority should step into his place and do whatever was necessary.

Sir MAURICE DOCKERELL supported the Bill, and urged that it should be made mandatory.

Mr. DEVLIN asked why the Bill was introduced now and not incorporated in the new health proposals submitted to Parliament for Ireland.

Sir E. CARSON pointed out that the Ministry of Health Bill was purely a machinery measure, and it was the duty of the Ministry afterwards to take care to propose in the way of legislation and administration such matters as might be necessary to promote health in Ireland. He thought, therefore, that the Government had taken the right course in bringing in this very belated Bill for this one specific subject. He hoped that the Bill would be made mandatory.

Major NEWMAN said he would like to know who was going to be the medical officer. Was it going to be the dispensary doctor, and would he have added to his very exacting duties that of inspecting the schools in his areas? If so he would have to neglect half his patients.

Mr. D. WILSON also pleaded that medical treatment of children should not be added to the treatment of the dispensary doctors, which would be an absolute absurdity. These medical men had duties to perform over a very wide area at a miserable salary, and it would be impossible for them to carry out their present duties if they had imposed upon them additional duties of this kind. He thought this ought to be a sort of State service.

The ATTORNEY-GENERAL FOR IRELAND, replying to the debate, said the Government had every reason to be satisfied with the reception of the Bill. He would point out that legislation on these matters in Ireland had up to the present been permissive. If legislation of that sort was to be mandatory it was well to ask what machinery they had at present in existence for its enforcement.

The Bill was read a second time and committed to a Standing Committee.

TUESDAY, MARCH 25TH.

Demobilisation of Medical Men.

Mr. LEONARD LYLE asked the Secretary of State for War whether he could state what were the latest orders he had issued for the demobilisation of additional doctors and nurses still attached to the Army; and what steps he was taking to release medical men who were now serving in India, and whose practices were suffering from their long absence.—Mr. CHURCHILL (Secretary for War) replied: Orders have been issued that medical officers shall be released from all theatres of war immediately it becomes possible to dispense with their services, and that the number employed shall be reduced in proportion to the reduction in other arms, as far as the large areas occupied and the wide distribution of troops in enemy territory permits. Orders have also been issued to the effect that all nurses shall be released immediately their services can be spared. During the last ten days considerable numbers of doctors and nurses have been demobilised. As regards those officers serving in India the peace establishment, which is composed of Regular Army officers only, is being adjusted as quickly as circumstances permit, and 100 Regular officers are on their way or are awaiting early passage.

Dr. Cyril H. Durrant has been reappointed an Official Member of the Legislative Council of the Island of Saint Vincent.

THE NURSES' COÖPERATION.—The twenty-eighth annual report of this institution dealing with the year 1918 shows a very satisfactory balance sheet, the fees received by the nurses (£57,286) far exceeding those earned in any previous year. Of this sum the nurses received £53,638. The income of the society derived from the commission on fees earned by the nurses was £3646, and to this was added £75 derived from interest. The number of nurses on the general staff was 450, and the total number of cases nursed, including mental cases, 6055.

THE SERVICES.

ARMY MEDICAL SERVICE.

Colonels retained on the active list under the provisions of Article 120, Royal Warrant, for pay and to be supernumeraries: H. L. R. Macleod, N. C. Ferguson, S. G. Allen, P. C. H. Gord, N. O. H. Melville, J. S. Davidson, J. Fallon, G. B. Barefoot, T. Du B. White, H. T. Knaggs, R. H. Penton, A. L. F. Bate, F. J. Morgan, B. H. Scott, W. L. Gray, C. A. Young, E. M. Hasard, G. T. Rawnsley, A. J. Luther, S. G. Moores, T. B. Beach, C. W. E. Healey, W. T. Mould, A. W. Bewley, K. J. Copeland.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. and Bt. Col. A. L. A. Webb is seconded whilst employed under the Ministry of Pensions.

Lieut.-Col. H. K. Palmer is placed temporarily on the half-pay list on account of ill-health contracted on active service.

Major A. B. S. Irvine relinquishes the temporary rank of Lieutenant-Colonel on re-posting.

Major G. H. Cathcart relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Capt. P. G. M. Elvery and J. J. H. Beckton relinquish the acting rank of Lieutenant-Colonel on re-posting.

To be acting Lieutenant-Colonels:—Majors A. D. Harvey (while employed as Director General of Medical Services of an Army) and G. de la Cour (while in command of a Medical Unit). Whilst in command of a Medical Unit: Capt. F. E. Lang, R. O'Kelly, H. T. Davis, N. T. Whitehead (acting Major).

Temp. Major A. J. Gardner, Can. A.M.C., to be acting Lieutenant-Colonel and to command No. 2 Canadian Field Ambulance.

Temp. Capt. F. Fraser to be temporary Lieutenant-Colonel.

The undermentioned relinquish the acting rank of Major: Capt. W. W. MacNaught, V. T. Carruthers, W. Hunt; Temp. Capt. J. G. Heath, W. H. Stott, W. K. A. Richards, N. B. Stewart, C. C. Irvine, F. B. Young, R. C. Harkness, N. C. Lake, H. V. Stanley, J. H. Porter, A. B. Richmond, H. H. Warren, H. R. Grellet, W. Mason, A. O. T. Woodward, W. S. Danks, G. Willis, W. S. Stevenson, H. R. Davies, J. M. Moyes, V. F. Southall, R. Felton, W. Crabtree, J. F. Robertson.

Capt. (acting Major) O. B. Pratt to be placed temporarily on the half-pay list on account of ill-health.

Captain B. H. C. Lea-Wilson is seconded for service with the Egyptian Army.

Temp. Capt. H. A. Gates relinquishes the acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Temp. Capt. H. McIntyre to be acting Major whilst commanding troops on a hospital ship.

Temp. Capt. D. J. Miller, Can. A.M.C., to be acting Major while employed at a Canadian General Hospital.

Temporary Lieutenants to be temporary Captains: H. W. Bennett, B. H. Peters, J. Rickards, J. Maxwell.

Temp. Hon. Lieut. O. B. Bird to be temporary Hon. Captain.

Officers relinquishing their commissions: Temp. Lieut.-Col. C. J. Trimble (Lieutenant-Colonel and Honorary Colonel, T.F. Res.).

Temporary Majors retaining the rank of Major: F. R. Seymour, G. Taylor, P. Turner, W. H. Whitehouse. Temporary Captains retaining the rank of Major: T. Mackenzie, N. B. Stewart, A. M. Caverhill, R. P. Nash. Temporary Captains retaining the rank of Captain: W. G. Macdonald, R. T. Herdman, S. H. S. Taylor, G. S. Clancy, K. G. Hearne, W. J. Isbister, E. C. Graves, W. A. Taylor, A. Levy, R. E. G. Gray, J. McMillan, G. H. Mackney, A. B. Fearley, H. R. Elliott, G. H. Jones, F. S. Hawks, H. P. Aubrey, G. Williams, C. E. Wise, W. H. Johnston, A. C. Greenwood, G. G. Timpon, J. Lascelles, M. F. Scanlon, J. Langwill, W. J. Macnab, E. L. Z. Pickling, F. H. Fuller, C. H. A. Alport, T. H. Whittington, G. B. King, W. S. Melville, J. Dawson, S. G. McDonald, F. J. Watkin, C. V. Cornish, J. Henderson, A. G. M. Middleton, A. H. Southam, D. Higgins, A. M. Watts, D. J. Smith, B. G. D. Benson, J. Wylie, W. F. H. Munden, J. Donaldson, W. Arnott, I. O'Keefe, F. O. Clarke, W. J. Mielton, G. Stewart, F. W. Stewart, H. V. Drew, R. A. Smith, G. H. U. Corbett, B. Maynard, L. W. Huellin, C. W. Hutt, H. McC. Fleming, P. Hurson, J. A. B. Hammond, W. J. B. Brown, J. R. Bigg, J. F. Gallaher, M. Proukka, T. Gardner, M. C. Sparrow, E. C. Williams, J. Brown, D. Purdie, W. Griffith, B. S. Prior, A. G. Mowat, E. D. W. Reid, S. Gooding, E. Coleman. Temp. Hon. Capt. F. W. Hamilton (on ceasing to serve with No. 2 British Red Cross Hospital, and retains the honorary rank of Captain). Temp. Hon. Capt. H. de L. Crawford (on ceasing to serve with the Irish Counties War Hospital, and retains the honorary rank of Captain). Temporary Lieutenants retaining the rank of Lieutenant: P. C. Phillips, A. L. Aymer, N. Lavers, H. B. Lister, D. B. Young, J. V. Rees, G. Marshall, H. Manage.

SPECIAL RESERVE OF OFFICERS.

Capt. A. J. Beveridge relinquishes the acting rank of Major on re-posting.

Capt. N. L. Lochrane and R. L. Impey relinquish their commissions, and retain the rank of Captain.

Capt. C. M. Page relinquishes the acting rank of Lieutenant-Colonel on re-posting.

Captains relinquishing the acting rank of Major: R. A. Greenwood, C. R. McIntosh, S. K. Young, A. W. Russell, J. J. McI. Shaw, Bt. Major R. C. O'zanne.

Captains to be acting Majors: F. H. Goss, J. W. Malcolm, J. le M. Kneebone, W. M. Dickson.

TERRITORIAL FORCE.

Majors to be Lieutenant-Colonels: H. C. Lampert, J. T. Thomas, W. B. Mackay, J. B. Berry, H. C. Donald (acting Lieut.-Col.), W. Sinclair, J. H. G. Whitford, D. Darran, S. Nesfield, O. R. Laurie, R. Stirling, T. Forrest (Bt. Lieut.-Col.), T. Holt, J. R. Harper (acting Lieut.-Col.), W. M. Gabriel (Bt. Lieut.-Col.), A. Butler, J. S. Y. Rogers, P. Paget, A. D. Ducat (acting Lieut.-Col.), A. H. Vernon, E. G. Peck, W. L. Bentley, J. H. Harris, J. P. S. Ward, A. C. Miller, J. L. Loudon, R. Emmett, H. L. de Legh, J. Howard-Jones, A. P. Swanson (acting Lieut.-Col.), H. Jones (Bt. Lieut.-Col.), G. O. Taylor, J. W. Nicholson, M. A. Cooke, J. B. Jamieson, C. A. Gouillet, J. Allison.

General List.—Majors (acting Lieut.-Cols.) W. Archibald and A. P. Swanson relinquish their acting rank on ceasing to be specially employed.

Major J. W. Keay is restored to the establishment.
 Capt. (acting Majors) P. Hauxwell, L. A. Mackenzie, A. Radford, T. J. T. Moffatt, H. F. E. Erett, F. Coleman, G. B. Fleming, W. Redpath, J. McL. Macfarlane, R. Babet, S. McCausland, W. D. Frew, J. W. Kemp, R. J. Chapman, W. Briggs, J. E. G. Thomson, O. K. Wright relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Lieut.-Col.) J. MacMillan, R. Burgess, A. Ramsbottom relinquish their acting rank on ceasing to be specially employed.

Capt. (acting Majors) to be acting Lieutenant-Colonels whilst specially employed: F. Darlow, J. D. Fiddes, J. A. Davies.

Capt. L. A. Mackenzie, F. P. Gibb, W. G. Mackenzie, C. G. K. Sharp, F. W. Burn, E. C. Plummer, J. G. F. Hoeken, to be acting Majors whilst specially employed.

Capt. P. H. Mitchiner, from 5th London General Hospital, to be Captain.

Capt. (acting Major) J. D. Wells relinquishes his acting rank on vacating the appointment of Deputy Assistant Director of Medical Services.

Capt. (Brevet-Major) C. H. S. Frankau is restored to the establishment.

Capt. A. C. Devereux and W. A. Salter relinquish their commissions and retain the rank of Captain.

Capt. (acting Major) A. L. S. Tuke to be Major.

Capt. (acting Lieut.-Col.) H. Henry to be Major and to retain his acting rank.

Capt. (acting Major) H. E. Fox relinquishes his commission and retains the rank of Major.

1st Scottish General Hospital: Capt. A. W. Falconer is restored to the establishment.

2nd Scottish General Hospital: Capt. W. J. Stuart is restored to the establishment.

4th Scottish General Hospital: Capt. (acting Major) D. Lamb relinquishes his acting rank on ceasing to be specially employed.

1st Eastern General Hospital: Capt. R. C. Canney is restored to the establishment.

2nd Northern Field Ambulance: Capt. (acting Major) W. H. Morrison relinquishes his acting rank on ceasing to be specially employed.

5th London General Hospital: Capt. (acting Major) P. H. Mitchiner relinquishes his acting rank on ceasing to be specially employed.

4th Battalion, Northern General Hospital: Capt. H. J. Smith is restored to the establishment.

Lowland Casualty Clearing Station: Capt. (acting Lieut.-Col.) G. B. Fleming reverts to the acting rank of Major on ceasing to command a Casualty Clearing Station.

TERRITORIAL FORCE RESERVE.

Capt. S. McCausland, from 1st West Lancs Field Ambulance, to be Captain.

Capt. D. Lamb, from 4th Scottish General Hospital, to be Captain.

Capt. J. E. G. Thomson, from 1st Highland Field Ambulance, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—G. Dreyer (temporary Honorary Lieutenant-Colonel, R.A.M.C.) is granted a temporary commission as Honorary Lieutenant-Colonel.

Lieut. J. A. Johnson to be Captain.

Major F. H. Stephens (Staff Surgeon, R.N.) relinquishes his commission on ceasing to be employed.

The undermentioned are transferred to unemployed list: Captain D. H. Fraser, Captain A. MacLennan (R.A.M.C. T.F.), Lieuts. L. C. W. Balls, J. J. Savage, G. D. M. Beaton, and P. M. Roberts.

DEATHS IN THE SERVICES.

Deputy Surgeon-General Samuel Jardine Wyndow, M.D. (Aberd.), M.S., retired, who died at Bencombe House, Uley, Glouce., on March 19th, was a son of Capt. S. Wyndow, of the 1st Dragoons. He was born on April 3rd, 1830, and was educated at Cheltenham, where he entered in 1845. In October, 1850, he came up to St. George's Hospital, where he was a contemporary of the late H. W. Bellue, Vandyke Carter, W. R. Cornish (all of whom joined the I.M.S.), and of other well-known students; as a dresser he served under Frank Buckland, who was house surgeon to the hospital in 1852. Having taken the M.R.C.S. in 1854, he immediately joined the H.E.I.C.S. (Madras establishment). He saw active service in the Mutiny, for which he had the medal and received the thanks of the Indian Government. From 1867 to 1881 he was residency surgeon at Hyderabad, superintendent of the Hyderabad Medical School and of the civil dispensaries in the Nizam's dominions; he retired in 1881 with the rank of Deputy Surgeon-General.

Brig. Surg. Lieut.-Col. J. Robinson, Army Medical Staff, retired, died at his residence at Reading on March 23rd, aged 84. He entered the Army Medical Service in 1858, and subsequently served in the Afghan War of 1878-80 (medal), the Egyptian War of 1882 (medal with clasp and bronze star), and in India, China, and Zululand. He retired in 1883, and in 1882 he took charge of the medical depot at Reading Barracks, a position which he held for several years.

THE ROYAL SANITARY INSTITUTE.—A congress will be held at Newcastle-upon-Tyne from July 28th to August 2nd, under the presidency of the Duke of Northumberland. Papers will be read and discussions held on sanitary science and preventive medicine, engineering and architecture, hygiene of maternity and child welfare, and on personal, domestic, and industrial hygiene. In connexion with the meeting a health exhibition will be held specially illustrating hygiene of infants and child welfare; housing, including laying out of estates, planning, materials and construction, fittings and appliances; ship sanitation, &c., as well as matters relating to municipal sanitation and domestic health and comfort. Visits will be made to water works, sewage disposal works, isolation and other hospitals, and other places of sanitary interest. The address of the secretary is the Royal Sanitary Institute, 90, Buckingham Palace-road, London, S.W.

Medical News.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

THIRD M.B. AND CH.B. EXAMINATION.

General Pathology and Morbid Anatomy—Simon Almond, Martha F. Barritt, Phyllis M. Congdon, Margaret McP. Corbold, Dorothy M. L. Dyson, A. M. El-Agutz, Percival Fildes, Joshua Harris, Ernest Jones, Gertrude B. Leigh, H. A. Lomax, Alexander Maude, J. S. Robinson, Annie Rothwell, Geoffrey Talbot, and S. J. Woodall.

DIPLOMA IN PUBLIC HEALTH.

Part I.—A. W. Baker, G. H. T. N. Clarke, G. J. Crawford, A. Heath, M. E. A. Laid, J. L. Meynell, E. N. Ramsbottom, H. F. Sheldon, and F. H. Walker.
Part II.—J. Walker.

DIPLOMA IN DENTISTRY (Third Examination).

Physiology and Dental Anatomy and Histology.—H. Walsley.

UNIVERSITY OF LIVERPOOL.—At a congregation held recently degrees were conferred as follows:—

DEGREE OF M.D.

Stanley Fox Linton (*in absentia*).

DEGREES OF M.B., CH.B.

Stuart Douglas McCausland (honours), William Thomas Davies, Philip Eldon Gorst, and Richard Randall Bernard Roberts.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the recent Dental Examinations just concluded the following candidates passed the Final Examination and were granted the diploma L.D.S., R.C.S. Edin.:—

John Bruce Watson Telford, Leith; Nico Hofmeyr Albertyn, Paarl, South Africa; Andrew John Molyneux, Kimberley, South Africa; George Laing, Keith; John Storey, Alston, Cumberland; Egbert John Charles Steyn, Riversdale, South Africa; Robert Mitchell du Preez, Riversdale, South Africa; and William Harvie Kerr, Edinburgh.

ROYAL MEDICAL BENEVOLENT FUND.—The annual meeting of this Fund was held at 11, Chandos-street, W., on March 11th, Dr. Samuel West, the President, being in the chair. The annual report, which was submitted and approved, showed the continued prosperity of the Fund, which had not suffered from the success of the War Emergency Fund. The latter, now registered under the War Charities Act, had yielded on a first appeal nearly £3900 and on a second £22,000 with premises of £680 more. Expenses of collection amounted to £1687, or 7 per cent. of the total. A special subcommittee, under the chairmanship of Sir A. Pearce Gould, investigated cases, made grants, and put applicants in touch with Government departments providing resources. With demobilisation taking place, applications were becoming numerous, and it was hoped to obtain another £7000 to bring up the total to the £30,000 which had been asked for. In the grant department the subscriptions and donations for the year 1918 showed a decrease of £42. On the other hand, £256 more than last year had been distributed, the difference being made up by contributions from the special dinner account. Of this £120 was given in the form of a Christmas gift to the most necessitous of the cases. In the annuity department the income for the year was £4332, showing an increase of £585 on last year's figures. Of this £310 10s. 10d. is accounted for by legacies received, which with the returned income-tax and balance enabled £1000 National War Bonds to be purchased as an investment. Though in the accounts the number of annuitants in 1918 remained the same, six more annuitants were elected since the books were closed, bringing the total up to 167, against last year's 161. The amount distributed was £3128, showing an increase of £47 over 1917. A sum of £1 had been sent as usual to each annuitant as a Christmas-box. Dr. West was re-elected President, Colonel Charters Symonds honorary treasurer, and Dr. G. Newton Pitt honorary secretary. The following were elected members of the committee of management: Dr. G. E. Haslip, Dr. W. Collier, Sir Hugh Rigby, Dr. R. O. Moon, Mr. Charles Ryall, Dr. Arnold Chaplin, Dr. W. Pasteur, Mr. Warren Low, Mr. Percy Sargent, Dr. C. W. Chapman, Mr. Raymond Johnson, and Mr. H. S. Soutar.

At the last meeting of the committee, held on March 11th, 25 cases were considered and £293 8s. voted to 24 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 84, of M.D. Lond., who practised at Carnarvon and died in 1872. Only income old-age pension. Lives with widowed sister who cannot afford to keep her. Voted £18 in 12 instalments.—Widow, aged 59, of M.R.C.S. Eng., who practised at Bristol, and at the time of his death in 1917 was a civilian Army doctor. Applicant's only certain income a pension of £75, and derives a little from letting her cottage in July and August. Has two daughters, ages 33 and 31; the youngest has to look after her mother, who has recently developed an incurable disease. Voted £10 in 2 instalments.—Widow, aged 35, of M.R.C.S. Eng., who practised at Witney and died in 1918. Applicant left with three children ages 8 to 11. Income from investments £200 to £300 a year. After April rent will be 30s. per week for furnished rooms. A 1s. for help towards education of children. Voted 25 and referred to the Guild.—M.B. Aberd., aged 75, who practised at Upper Tooting. Married. Four

children, ages 6 to 12. Had to give up practice through age and chronic ill-health. Eldest boy suffering from abdominal tuberculosis, which necessitated his removal to the seaside. Income about £150. Rent for furnished house £10 a year. Owing to high cost of living finds he cannot manage. Voted £5 and referred to the Guild.—Widow, aged 38, of M.B. Lond., who practised in Lancashire and died in 1918. Left totally unprovided for with three children, ages 1 to 4 years. Has a paying guest at 25s. per week. Some help from the Guild and her brother pays the rent. Relieved once, £10. Voted £10 in two instalments.—M.R.C.S. Eng., aged 52, who practised in Liverpool and abroad. Suffered from sunstroke when abroad and has not been able to work since. Lives with an aunt, who is unable to keep him. No income, but has occasional help from friends. Relieved six times, £30. Voted £10 in two instalments.—Widow, aged 61, of M.D. Edin., who practised at Wetheral and died in 1908. Endeavours to earn a living by taking in lodgers. Four children, three married, and the eldest helping with the house work. Eldest son allows £15 a year. Rent and rates £30. Relieved 13 times, £154. Voted £15 in 12 instalments.—Widow, aged 65, of M.D. Edin., who practised at Edinburgh and died in 1909. Applicant has four children, but none able to help at present. Pension from another charity of £15. Rent £18. Relieved ten times, £104. Voted £12 in 12 instalments.—Widow, aged 58, of M.R.C.S. Eng., who practised in Devonshire and died in 1914. Was left entirely without means, and has had to undertake domestic service. One daughter, aged 27, a nurse. Applicant at present out of employment. Relieved six times, £52. Voted £12 in 12 instalments.—Daughter, aged 72, of M.R.C.S. Eng., who practised in London and died in 1875. Applicant was a governess for 40 years, and was in Russia when the war commenced, and lost all her savings. Has an Epsom pension of £30 and help from the Guild. Relieved 6 times, £61. Voted £12 in 12 instalments.—Widow, aged 71, of M.D. Edin., who practised at Bolton and died in 1905. Lost the greater part of her income through a fraudulent trustee. Income from property £71. Rent and rates £20. Two children, one married, and the youngest, aged 43, a shop assistant, earning £1 a week. Relieved three times, £26. Voted £12 in 12 instalments.—Daughter, aged 72, of M.D. Edin., who practised at Cheltenham and died in 1879. Applicant's income about £40 from another charity, and pays 4s. 6d. per week rent. Failing eyesight prevents her from earning. Relieved four times, £48. Voted £15 in 12 instalments.

Subscriptions may be sent to the acting honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W. 1.

Dr. W. H. Willcox will deliver his postponed Lettsomian lectures on Jaundice on April 28th and 30th and May 2nd, at 9 p.m., at the Medical Society of London, 11, Chandos-street, W.

ROYAL INSTITUTION.—On Tuesday, April 1st, at 3 p.m., Professor A. Keith will deliver the last of a series of lectures on British Ethnology—the People of Scotland. On Thursday, April 3rd, at 3 p.m., Professor A. Findlay will deliver the first of a course of two lectures at the Royal Institution on Colloidal Matter and its Properties.

THE Lord Chancellor has sanctioned the re-appointment by Dr. F. J. Waldo, H.M. Coroner for the City and Borough of Southwark, of Major Danford Thomas, to act as his deputy. Major Thomas rejoined the Territorials in 1914, and was gazetted to the 7th Battalion, London Regiment, and has served in France during the last three years of the war.

Appointments.

EVERY-CLAYDON, L. E. V., M.D. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Clevedon District of Somerset.

MAIR, J., Certifying Surgeon under the Factory and Workshop Acts for the Harrogate District (West Riding).

THOMSON, F. G., M.A., M.D., M.R.C.P. Lond., Physician to the Royal United Hospital, Bath.

WALKER, E. H., M.R.C.S., L.R.C.P. Lond., Certifying Surgeon under the Factory and Workshop Acts for the Wrotham District of Kent.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen City, Mother and Child Welfare.—M.O. £500.

Bedford County Hospital.—H.S. £175.

Belfast, Queen's University.—Prof. of Anat. £900.

Birkenhead Union Infirmary and Institution, Tranmere.—Med. Supt. £800.

Birmingham University Faculty of Medicine.—Asst. Prof. of Anatomy. £500.

Blackburn and East Lancashire Royal Infirmary.—H.S. £250.

Bradford Children's Hospital.—H.S. £170.

Bradford City.—Ven. Dis. O.

Bradford Royal Infirmary.—H.P. £200.

Brecon and Kautohr Asylum, Talgarth, Breconshire.—Temp. Asst. M.O. £7 7s. per week.

Burnley County Borough.—Asst. M.O. £560.

Burton-on-Trent Infirmary.—Res. H.S. £200.

Chelsea, L.C.C. School Treatment Centre Minor Ailment Department.—M.O. £50.

Chester City and County.—Asst. M.O.H. £400.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—M.O. £200.

Colchester, Essex County Hospital.—H.S. Also H.P. Each £200.

Croydon General Hospital.—Res. H.S.

Derbyshire Hospital for Sick Children.—Female Res. M.O. £150.

Devonbury and District General Infirmary.—H.S. £250.

Dublin University, Fuh Kien Mission (C.M.S.).—Female Doctor for Fuhing, S. China.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Asst. Phys. Also M.O. for Electrical Department.

Falkland Islands.—Colonial S. £400.

Federated Malay States Government.—Seven M.O., Grade II., and Three female M.O., £350.

Fiji Medical Appointments.—Five M.O. £300.

Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.

Guildford, Royal Surrey County Hospital.—H.S.

Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. and Asst. Tuberc. O. 30 ks.

Hospital for Sick Children, Great Ormond-street, W.C.—H.S. £50. Also Cas. M.O. £200.

Huddersfield Royal Infirmary.—Asst. H.S. £100.

Hull City Asylum.—Second Asst. M.O. £250.

Keighley Borough Education Committee.—Female Asst. M.O. £300.

Kennington Board of Guardians.—Second Asst. Res. O. £325.

Kirkcubrick, Creetown, Kirkcubrightshire.—M.O. £40.

Lords General Infirmary.—Res. Cas. O. £125.

London County Mental Hospital, Berkey, Kent.—Asst. M.O. £7 7s. per week.

London Temperance Hospital, Hampstead-road, N.W.—Asst. Res. M.O. £120.

Manchester Children's Hospital, Pendlebury, Cartside-street.—Asst. M.O. £200.

Manchester Corporation.—Asst. Tuberc. O. £150.

Manchester Royal Infirmary (Central Branch), Roby-street.—Res. S.O. £200.

Manchester and Salford Hospital for Skin Diseases.—H.S. £100.

Melbourne, Australia, Walter and Eliza Hall Institute of Research in Pathology and Medicine.—Med. Research Director. £1000. Also First Asst. £600.

Metropolitan Ear, Nose, and Throat Hospital, Fitzroy-square, W.—H.S. £100.

Newcastle-upon-Tyne, City Hospital for Infectious Diseases, Walker Gate.—Res. M. Asst. £250.

Newcastle-upon-Tyne Dispensary.—Res. M.O. £300.

Newcastle-upon-Tyne, Royal Victoria Infirmary and the University of Durham College of Medicine.—Asst. to Prof. of Path.

Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £300 to £400.

Northamptonshire County Council.—Female M.O. £400.

Norwich, Norfolk and Norwich Hospital.—Hon. S.

Paddington Green Children's Hospital.—Hon. P., Hon. S., and Hon. Ophth. S. to Out-patients.

Plymouth, South Devon and East Cornwall Hospital.—H.P. £150.

Prince of Wales's General Hospital, Tottenham, London, N.—Hon. Asst. P. in Out-patients' Dept. Also Sen. H.P. and Sen. H.S. £200.

Also Jun. H.P. and Jun. H.S. £120.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Asst. Anesth. £50.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Honorary Gynaecologist to Out-patients.

St. George's Hospital, S.W.—Two Res. M.O.

Saint Lucia.—M.O. £350.

Sechelles Government.—Asst. M.O. and Visiting Magistrate. £200.

Sheffield, East End Branch of the Children's Hospital.—H.S. £150.

Sheffield Royal Hospital.—Cas. O. £130.

Sheffield Royal Infirmary.—Res. S.O. £200.

Southampton, Free Eye Hospital.—H.S. £150.

Southport General Infirmary.—Hon. Ophth. S. and Hon. Anesth.

Straths Settlements Government.—Six M.O. £350.

Surrey County Council.—School Dentist. £350.

Swansea County Borough.—Asst. M.O. £500 and £400.

University College Hospital.—Clin. Path. £500. Also Clin. Asst.

Walsall General Hospital.—Female H.S. and Anesth. £175.

Warford, Alderley Edge, David Lewis Epileptic Colony.—Med. Asst. Director. £400.

Wetherby Government.—Jun. M.O. £400.

Wellingdon College, Berkshire.—M.O. £800.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of

vacancies for Certifying Surgeons under the Factory and Workshop Acts at New Southgate, and at Thorne (West Riding).

Births, Marriages, and Deaths.

BIRTHS.

IRVINE.—On March 9th, at Bareilly, United Provinces, India, the wife of Captain Maurice L. C. Irvine, Indian Medical Service, of a son.

(By cable.)

POWELL.—On March 19th, at Reading, to Dr. and Mrs. Leslie Powell—

a son.

WOODS.—On March 18th, at Bramfield, Abbeville-road, Clapham Park,

the wife of Dr. M. M. Woods, of a son.

YOUNGER.—On March 25th, 1919, at 2, Mecklenburgh-square, the wife of G. C. Nelson Younger, M.R.C.S., L.R.C.P., of a daughter.

DEATHS.

BROOKE.—On March 19th, at Talma House, Victoria-park, Manchester,

Henry Ambrose Grundy Brooke, M.B., B.A. Lond.

DE DENNE.—On March 17th, at Fareham, Thomas Vincent de Denne,

M.R.C.S., L.R.C.P., of St. James's Lodge, Sidmouth.

DICKSON.—On March 17th, at Holmwood, Grove-crescent, Kingston-on-

Thames, Thomas Hugh Dickson, M.A., M.B. Cantab., Medical

Inspector H.M. Customs and Excise, London, aged 55.

HARTLEY.—On March 20th, of heart failure following influenza, Colonel

Edmund Baron Hartley, V.C., C.M.G., formerly Principal Medical

Officer, Cape Colonial Forces, and Surgeon, Cape Mounted Rifles,

in his 72nd year.

WATSON.—On March 20th, at Chiltern House, Princes Risborough,

Bucks, Frank Spencer Watson, M.R.C.S., L.R.C.P., in his 64th year.

WYNDOWE.—On March 19th, at Bencombe House, Uley, Glouce.,

Dy. Surg.-Gen. S. Jardine Wyndowe, M.D., I.M.S., ret'd., aged 89.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births,

Marriages, and Deaths.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Wednesday, April 2nd.

SOCIAL EVENING: at 8.30 P.M.

Dr. William Hunter: On Experiences and Results of Antityphoid Inoculation in Eastern War Areas, 1915-1919.

N.B.—No meetings will be held on Wednesday, April 9th, Wednesday, April 16th, and Wednesday, April 23rd.

MEETINGS OF SECTIONS.

Wednesday, April 2nd.

OPHTHALMOLOGY AND LARYNGOLOGY (Hon. Secretaries—Leslie Paxon, Malcolm Hepburn, Frank A. Rose, Irwin Moore): at 8 P.M.

Discussion:

On Injuries and Inflammatory Diseases affecting the Orbit and Accessory Sinuses.

Openers: Mr. L. V. Cargill, Mr. G. Seccombe Hett, Mr. A. W. Ormond, and Mr. E. D. D. Davis.

The following will also take part in the Discussion: Mr. Brewerton, Mr. D. Leighton Davies, Mr. H. D. Gillies, Mr. Stuart-Low, Mr. Mackay, Mr. W. M. Morrison, Mr. J. F. O'Malley, Mr. G. H. Pooley, Mr. E. H. B. Stack, Sir St. Clair Thomson, Mr. Herbert Tilley, Mr. H. Lawson White and Mr. A. L. Whitehead.

Thursday, April 3rd.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Comyns Berkeley, J. S. Fairbairn): at 8 P.M.

Paper:

Mr. Gordon Ley: Full Time Extra-uterine Gestation (with a Report on Three Cases).

Speakers: Mr. Gilliatt, Dr. A. E. Giles, Dr. Herbert Williamson, Mr. J. P. Hedley, Dr. J. S. Fairbairn, Dr. Russell Andrews, Mr. Bellingham Smith.

Mr. Clifford White will show a Specimen and read Notes on a Case of Full Time Extra-uterine Gestation.

Specimens will also be shown by—

Dr. Russell Andrews, Mr. Bellingham Smith, Mr. Clifford White, Mr. J. D. Malcolm, and Dr. Herbert Williamson.

Friday, April 4th.

LARYNGOLOGY (Hon. Secretaries—Frank A. Rose, Irwin Moore): at 4 P.M.

Cases will be shown.

ANÆSTHETICS (Hon. Secretaries—F. E. Shipway, R. E. Apperly): at 8.30 P.M.

Electron of Officers and Council for 1919-1920.

Clinical Evening.—The Hon. Secretaries would be glad to receive at least four days before the meeting notes of any interesting Cases that members would like to bring before the Section.

The Royal Society of Medicine keeps open house for medical officers of all the Allied Forces, and invites them to make free use of its library and rooms. The Emergency Post Graduate Scheme, under the charge of the "Fellowship of Medicine," is also open to all medical officers. Particulars of this will be supplied by the Secretary Fellowship of Medicine, 1, Wimpole-street, London, W.1.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

MONDAY, March 31st.—4.30 P.M., Cantor Lecture:—Prof. H. E. Armstrong: Problems of Food and their Connexion with our Economic Policy. (Lecture I.)

RÖNTGEN SOCIETY, at the Royal Society of Arts, 18, John-street, Strand, W.C.

TUESDAY, April 1st.—8.15 P.M., General Meeting. Paper: Dr. W. S. Lazarus-Barlow: Some Biological Effects produced by Small Quantities of Radium.

CHILD-STUDY SOCIETY LONDON, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY, April 3rd.—6 P.M., Lecture:—Dr. E. Pritchard: Home versus Institutional Training of Young Children.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY, April 1st.—5 P.M., Goulstonian Lectures:—Dr. W. W. C. Topley: The Spread of Bacterial Infection.

THURSDAY.—5 P.M., Lumleian Lectures:—Sir H. D. Rolleston, K.C.B.: Cerebro-spinal Fever.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

Special Eight Weeks Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

LONDON HOSPITAL MEDICAL COLLEGE.

A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—

MONDAY, March 31st.—1 P.M., Lecture XI:—Ætiology—Symptoms, Complications and Treatment of Duodenal Ulcer.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.

A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).

WEDNESDAY, April 2nd.—5 P.M., Lecture IX:—Dr. L. S. Dudgeon: Enterica. Effects of Preventive Inoculation. Sand Fly Fever. Relapsing Fever.

FRIDAY.—5 P.M., Lecture X:—Dr. L. S. Dudgeon: Lecture IX continued. Trench Fever.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY, April 1st.—3 P.M., Lecture III:—Prof. A. Keith: British Ethnology—The People of Scotland.

THURSDAY.—3 P.M., Lecture I:—Prof. A. Findlay: Colloidal Matter and its Properties.

Notes, Short Comments, and Answers to Correspondents.

MOTHERCRAFT TRAINING FOR GIRLS.

At a meeting of the Child Study Society held at the Royal Sanitary Institute on March 20th a discussion was held on "Training of the School Girl in Infant Care." Dr. F. Truby King, the chairman, in opening the discussion, said that there was a tendency to train and educate both sexes on almost similar lines, whereas we should specialise both as regarded girls and boys. Had education first been evolved for women instead of men the male sex would hardly have regarded it as fair that a system of education intended for girls should be imposed upon it.

Mrs. K. Truelove, who opened the discussion, said that as far back as 1910 the Board of Education issued a brochure on the question of training the school girl in infant care and management, and the Registrar-General had just issued a report showing that the birth-rate for 1918 was the lowest on record. The child was born into the world less equipped for life and more dependent on its parents than any other animal, and, through lack of care and ignorance on the part of the mothers, our babies were paying a heavy toll. Schools for mothers and infant welfare centres were being established successfully everywhere, but they did not supply all that was needed, for the mothers who attended them were obviously of the thoughtful type, and not the class that most needed help and instruction. Some attention had been given to the health of the school child, but seeing that the older girls often had to act the part of mother in the homes some simple teaching on infant care was needed, and incidentally the girls would learn something which would be useful in after-life. The ideal of instruction in mothercraft for a girl would be the teaching of her own mother, but many women were forced by their conditions of life to leave their children to the care of an elder sister, many parents neglected to give the necessary instruction or were incapable of giving it, and, for the present at any rate, the duty of teaching fell upon the teachers in the schools. The instruction given in schools would necessarily be of a limited character, on account of the age of the pupil and on account of the crowding into the curriculum of other subjects. An experience of mothercraft teaching in one school for eight years had shown the subject to be popular with the girls, and the knowledge gained at an impressionable age stood them in good stead in after years, as was confirmed by parents and old scholars. If mothercraft was to be taught effectively, the subject required to be treated in a dignified and earnest manner, and much depended on the attitude of the teacher, who must gain the trust and confidence of the pupil. The reduction of infant mortality and the promotion of healthier conditions in the early life of the child were of extreme importance to the nation; the present period of change in educational ideas should give an impetus to work in this direction, the best and most effective channel for which was the school.

Scheme of Instruction.

Miss Hopking described the form of physiological instruction which was given. Nature study was taught to the younger children, whilst in the upper classes a graded scheme was adopted consisting of four parts. The first part consisted of simple instruction in physiology and personal hygiene, and included elementary teaching on the build of the body, the various systems, the position and work of the chief organs, and the uses and care of the teeth, nails, and skin. The second part included a course in physiology, hygiene, and first aid; the work of the chief organs of the body was revised, and instruction was given on the treatment of hæmorrhage, especially of varicose veins and bleeding from the nose; the application of artificial respiration, the chief uses of the triangular bandage, the carrying of patients, and the need for cleanliness, fresh air, sunshine, and food, and the use of food were explained. In the third part the first aid which was treated in the previous course was revised, and instruction was given in elementary nursing, including the treatment of common ailments, removal of foreign bodies, rolling bandages, choice and care of the sick-room, symptoms needing the doctor's care, and simple rules for the administration of medicine. In the fourth part instruction was given on infant care.

Miss Kerrison explained the fourth part of this scheme in more detail. The teaching of infant care in elementary schools would result, she considered, in the production of a really happy woman, sympathetic, gentle, self-reliant, and thorough. In these days many girls had no aspirations beyond office life. The girls were instructed as to the importance of mother's milk and the need for a hygienic bottle, the necessity of consulting a doctor when anything was wrong with the baby instead of rushing off to the chemist, and to recognise the symptoms which required treatment.

A doll was used for the teaching, and the apparatus and furniture were of the simplest character and such as the girls could obtain and make for themselves. A spring balance was used for weighing. For dressing the baby the three garments suggested in Mrs. Sims's book were admirable, and during needlework lessons the children were taught to cut out and make them. Girls were encouraged to ask questions, and every opportunity was given for each to take part in the demonstration. For this purpose classes were divided up into sections, and the girls in turn took the part of demonstrator. Where possible additional instruction should be given at a school for mothers.

*Teaching in Secondary and Continuation Schools:
Practical Results.*

Miss Turner said that Sir George Newman's report in 1911 had stimulated interest to a great extent, and there was now hardly an elementary school where the subject was not taught in some way. In some of the elementary schools the need for such teaching was appalling. The subject was remarkably well taught in women's institutes, but evening classes in London were devoted principally to commercial subjects. She hoped in the future that at continuation schools and in evening classes hygiene in some form or other, and civics—for the two subjects could not be separated—would be taught. If a woman was going to look after the babies she was going to be a good citizen. The subject should be compulsory in all secondary and continuation schools. Welfare work would provide a good and useful career for girls, and as under a Ministry of Health welfare centres would be established in all parts of the country, a large number of nurses would be required, and private people were beginning to value the qualified children's nurse. In nursery schools the teacher should possess both the teacher's and nurse's training. There were, therefore, likely to be a number of well-paid posts for girls in this direction. Those who left school at 14 could not take up nursing because the limits of age for that profession were generally 18 to 20.

Mrs. Randall explained the methods adopted at a school in introducing the subject about six years ago. A class of old and backward girls were initiated into the work with such success that the teachers in the higher classes became interested, and at the present time all the classes in the school received the instruction. The opening of a day nursery had been taken advantage of, and six girls, either in the morning or afternoon, attended there for a month. Certificates were given after a month's work at the nursery in order to encourage both girls and their parents.

Miss Wright, who had charge of the class referred to by Miss Randall, said that everything required for the instruction was made by the girls, and when they left her they were efficient in bathing, dressing, and feeding a baby. Girls who gave the most trouble at school seemed to become reformed as soon as they came under the influence of the teaching of infant care. During needlework hours all kinds of garments were made, and mothers frequently gave orders for their expected babies. Notebooks were kept during the lessons on infant care, and the books were retained for use by the girls at home.

Need and Value of Mothercraft.

Dr. Truby King said that he had had an opportunity of visiting the London County Council school at North Islington with which Mrs. Truelove was connected, and he was very much struck by the simplicity and direct nature of the teaching. It was obvious that all the girls were thoroughly interested in their work, and those who demonstrated the various phases of it had learned something of very great value. His experience in helping mothers and nurses for a great many years was that if they had been trained at school we should not meet with the appalling ignorance that confronted us every day. He thought there was as much ignorance on these matters in one class of society as in another. Most highly educated women lacked all knowledge of these fundamentally important matters. It was common for girls to know nothing about babies except that they were more or less of a nuisance. Mothercraft was important and ought to be taught in schools, but more ought also to be done for the mothers. After receiving instruction in school, opportunities ought to be available for girls to take practical charge of a baby for a few days; some system of that kind would, he hoped, soon become part of a girl's education in New Zealand. Mothercraft teaching helped to relax the strain caused by the tendency of modern education to put pressure on the pupils with regard to the accumulation of knowledge. This particular work acted as relaxation and refreshment, and the more it exercised the emotions the more it lessened the great strain of the ordinary school work. There was danger of the subject becoming too academic, for it was practical, and ought to be taught in a simple commonsense way. The necessary spirit for the work was that which inspired Florence Nightingale.

Miss Jobson and Miss Robins also spoke, the latter emphasising the importance of training in a day nursery for a month or a week in the teaching of mothercraft.

A vote of thanks to Dr. Truby King was passed on the motion of Dr. Kimmins, of Chislehurst.

CAUSE OR COINCIDENCE?

Dr. C. J. Hill Aitken, R.A.M.C., sends us the following contribution based on the old dilemma: *Post hoc, aut propter hoc?*

1. A South African native with well-marked pulmonary tuberculosis was one evening at the point of death—comatose and almost pulseless. Strychnine was not injected. In fact, nil was done. He survived the night and lived for a month.

2. A young girl was suffering from boils and her hair was falling out. Various remedies had been tried in vain. A course of colloidal manganese was recommended, but owing to a supply not being available the treatment was not carried out. About the time the fourth injection would have been due the boils healed and ceased to appear, and the hair stopped falling out.

Had drugs been used they would have gained much credit. In the first case the reason of the native's temporary recovery was beyond my clinical powers. In the second case cure coincided with a happy engagement.

A UNIVERSAL LANGUAGE OF QUANTITY.

It is suggested by Mr. Harry Allcock, M.I.E.E., A.I.Mech.E., writing for the Decimal Association, that with big schemes of industrial reconstruction afoot the opportunity is favourable for the adoption of the metric system and for making it international. If it is true that sooner or later Great Britain must abandon the British Imperial system (because even its stoutest supporters would refuse to undertake the impossible task of inducing the world to adopt it) the sooner a beginning is made the better. There can be little doubt that education, science, and industry would alike benefit under an international metric system. Science has already adopted it. Commercial circles in this country have so far been opposed to it, but the hope may be expressed that these will harden their hearts no longer if they can be convinced of the undoubted economic advantages which the introduction of the metric system would ultimately secure. It would be an immense reform, and the inevitable inconveniences which the change would at first bring would soon be forgotten. Other apparently dangerous innovations have recently been made with success. The introduction of summer-time was looked upon by many as a risky experiment, but it has worked out in practice to the advantage of all.

GRAIN PESTS AND SCIENTIFIC ACCURACY.

THE last of the series of lectures on Physiology and National Needs was delivered by Professor A. Dendy, F.R.S., at King's College on March 12th, when Sir James Kingston Fowler presided. In giving an account of the results of the experiments on the Conservation of Wheat which he, in conjunction with Mr. H. D. Elkington, had undertaken for the Grain Pest War Committee of the Royal Society, Professor Dendy insisted upon the extreme importance of scientific accuracy, and referred to an interesting physiological fact in regard to the asphyxiation of weevils. All grain was liable to be damaged by mites, moulds, mice and rats, and probably by bacteria. Mankind depended to a great extent on grain for existence, the storage of wheat being a very ancient practice. It was now necessary to store it for a longer time than formerly in order to provide against emergencies. Vast quantities of wheat had recently been held up in Australia owing to the scarcity of ships, the consequence being that a large part of it had become damaged or completely destroyed. The problem of conserving cereal reserves, either in the form of dried grain or manufactured products, was of great national importance, and the devising of reliable methods for storing such reserves was attracting considerable attention. The best known and most destructive enemies of wheat were weevils, but the larvae of certain moths which feed upon the debris of weevils also did much damage. Those whose duty it was to inspect warehouses where quantities of food were stored should have a knowledge of the habits of these pests, because they damaged other foods as well as grain. One experiment which had been carried out showed that a single pair of rice weevils multiplied 700-fold in about 16 weeks. Such multiplication, however, only took place in this country during the warmer months of the year; the grain, therefore, should be kept as cool as possible. The weevil required a certain amount of moisture in order to support life, and wheat, unfortunately, appeared to be a very hygroscopic substance. The eggs of the weevils were laid within the wheat grain itself, and developed until the adult stage was reached. During the process large quantities of the grain were eaten, the excreta accumulated and attracted

moisture, and moulds and bacteria grew vigorously. Sometimes the grain was in this way converted into a black mass resembling manure and giving off a large amount of ammonia.

Wheat was also damaged by a kind of fermentation which was technically known as "heating" and which always occurred when the grain was stored in large quantities. The various methods of cure for infected grain which had been suggested were troublesome and expensive. What was required was some method by means of which deterioration of the grain could be prevented, even after storage for a large number of years. A system of air-tight storage seemed to be the remedy; an approximation to this method had been employed for a long time both in India and in other parts of the world. The wheat was stored in pits, and, though the method was not always carried out satisfactorily, it was thus often free from attacks of weevils. In Malta wheat was kept in underground brick-lined granaries and in this way was immune from insect attacks and did not deteriorate. The beneficial results of the method were due to the generation of CO₂. In academic circles it had long been believed that weevils could live under circumstances which precluded ventilation. But this belief could not stand the test of precise experiment, for if placed in hermetically sealed jars containing wheat weevils died within a few days, whatever their stage of development. Thus, wheat might be completely sterilised so far as insects were concerned by hermetically sealing the grain for a short time. The origin of the widespread belief in the miraculous physiological powers of grain insects was probably due to the fact that so-called hermetically sealed vessels were not hermetically sealed at all. Tins of Army biscuits had been passed by the inspector as intact even though they showed obvious rents in their sides. Tins of "weeviled" barley had been brought to the lecturer with the intention of showing that weevils would live in air-tight tins, but on placing the tins in hot water all save one bubbled at the seams, and that one when opened was perfectly free from "weeviling." Airtight sealing also prevented the formation of moulds, and the process known as "heating." Native peoples who had no idea of the scientific explanation had known the secret of airtight storage for a surprisingly long time. Certain Natal farmers stored their grain in large tanks of galvanised iron in which they burned candles before closing up the tanks. It was easy to demonstrate that grain at ordinary times gave off quantities of CO₂; when insects were present the percentage was greatly increased, as they themselves gave off a considerable amount in respiration. Experiments had been carried out in order to discover whether the death of the insects was due to some poisonous action of the gas or simply to deprivation of oxygen, and it had been found that, whilst the absence of oxygen was sufficient to kill the weevils, the CO₂ also produced a poisonous effect. Weevils that had simply been anaesthetised by the CO₂ for some days could be resuscitated by supplying them liberally with oxygen. If, on the other hand, a little oxygen were mixed with the carbon dioxide, the weevils did not remain alive for long. While the oxygen present seemed to support life, it appeared to enable the CO₂ to exercise its poisonous effect; with pure carbon dioxide the living machinery was shut down at once and the gas had no chance of exercising its poisonous effects. The insect was asphyxiated, not poisoned. If the grain was stored in airtight receptacles in the country of origin for a few months before shipment it would become completely sterilised and, with care, would not become re-infected on the voyage, while if the grain was landed in this country uninfected there would be less risk from insect invasion.

THE MORTALITY IN THE FRENCH AUXILIARY ARMY MEDICAL CORPS.

A RECENT communication made by M. Gilbert Laurent to the French Interparliamentary Medical Group put the total number of civilian medical practitioners mobilised for war purposes at 2169. Of these 372, or 17 per cent., had died during the war, 259 of wounds, and 113 from other causes.

NERVE STRAIN IN LONDON CHILDREN.

OUR attention has been called to a resolution put down on the agenda of the newly elected London County Council in the name of the Labour Party. The resolution runs:—

"That in view of the high nervous strain imposed on the children of the working class during the war, and their diminished vitality arising from the shortage of food and its lack of variety, which, added to the normal conditions of social inferiority borne by the workers' children, has greatly reduced the stamina of the school population in the County of London, it be referred to the Education Committee to advise the Council at the next meeting of the Council as to the steps necessary for the purpose of securing that all children attending the Council's elementary schools shall have a holiday of one month at the seaside or in the country without charge to the parents."

While we have the greatest possible sympathy with the suggestion, it is only fair to add that, according to the medical evidence, London children have been, on the whole, better fed during the war than they were previously, while

there is not the slightest evidence that the children in elementary schools have been subjected to a greater strain than other children. It is, in fact, difficult to find evidence of strain at all; and what there is certainly is not widespread. But it would be an excellent thing for all London children to be taken to the seaside for a month, granted the necessary precautions could be exercised.

SACCHAROSE INJECTIONS IN PULMONARY PHTHISIS.

To the Editor of THE LANCET.

SIR,—Should any of your readers have had any experience of saccharose injections in cases of pulmonary phthisis I should be glad of some information as to the success or otherwise of this form of treatment. Thanking you in anticipation for the hospitality of your columns,

I am, Sir, yours faithfully,

J. LAVENS WEST, L.R.C.P. & S. E.,

March 25th, 1919. Assistant Tuberculosis Officer, Stoke-on-Trent.

Viperus.—The treatment of adder-bites in England was referred to in THE LANCET of August 21st, 1909 (p. 585), and in France in the Paris letter in THE LANCET of Sept. 20th, 1913 (p. 896). A 1 per cent. solution of permanganate of potash or of chromic acid has been used, but the only really efficacious and rational method, according to French authorities, is the use of Calmette's serum.

BOOKS, ETC., RECEIVED.

- HEINEMANN, WILLIAM, London.
Technique of the Irrigation Treatment of Wounds by the Carrel Method. By J. Dumas and A. ne Carrel. Translated by A. V. S. Lambert, M.D. With Introduction by W. W. Keen, M.D. 6s.
The Unmarried Mother. By P. G. Kannerer. With Introduction by W. Healy, M.D.
KEGAN PAUL, TRENCH, TRUBNER, AND CO., London.
What is Pevch's Analysis? By I. H. Coriat, M.D. 3s. 6d.
LAURIE, T. WERNER, London.
A Text-book of Sex Education for Teachers and Parents. By W. M. Galliehan. 6s.
A Broken Journey. By Mary Gaunt. 18s.
MASSON ET CIE., Paris.
Le Traitement des Psycho-névroses de Guerre. Par G. Roussay, J. Boissau, et M. d'Elisnitz. Fr. 4.
RIVERSIDE PRESS, Cambridge, Boston, U.S.A.
The Harvard Society of the Commonwealth of Massachusetts, 1785-1916. By M. A. de Wolfe Howe.

Communications, Letters, &c., to the Editor have been received from—

- A.—Dr. H. G. Adamson, Lond.; Messrs. Allen and Hanbury, Lond.; Dr. F. S. Arnold, Berkhamsted.
B.—Dr. G. Blacker, Lond.; Mrs. C. B. Bridgeman, Lond.; Dr. A. C. Begg, Swansea; Brompton Hospital for Consumption, Lond.; Sec. of: Capt. J. S. K. Boyd, R.A.M.C.; Mr. J. Burns, Edinburgh; Dr. M. Benaroya, Lond.; Prof. A. Bainbridge, Lond.
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H.—Dr. O. W. Hutt, Brighton; Dr. C. F. Hadfield, Lond.
I.—Insurance Committee for the County of London; Illuminating Engineering Society, Lond.
J.—Mr. G. L. Johnston, Bridge of Allan; Dr. F. W. Jones, Lond.
K.—Dr. L. Kidd, Enniskillen.
L.—Maj.-Gen. Sir W. B. Leishman, K.C.M.G., C.B.; Local Government Board, Lond., Asst. Sec. of: Mr. W. A. Loxton, Birmingham; Mr. R. Lake, Lond.; Liverpool Post and Mercury; Local Government Board, Lond., P.M.O. of.
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N.—Nurses' Co-operation, Lond.; National Food Reform Association, Lond.
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Y.—Dr. M. Young, Chester.

Communications relating to editorial business should be addressed exclusively to The Editor of THE LANCET, 423, Strand, London, W.C. 2.

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Readers in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral, Heart and Cardio, Liver and Hepatic, Biocycle and Cycle, Child and Infant, Bronchocele, Goitre, and Thyroid, Diabetes, Glycosuria and Sugar, Eye, Ophthalmic, and Vision, &c., &c. (Py Q) = Parliamentary Question.

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